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An Address
ON
ITCHING: ITS CAUSES AND TREATMENT.

Delivered to the Edinburgh Post-Graduate Vacation Course in Medicine on Sept. 15th, 1908,

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GENTLEMEN,—Everyone knows from personal experience what itchiness is, but when it comes to define the sensation in words a difficulty arises. It is not pain. Indeed, pain is in some respects the antithesis of itchiness, and while in quite a minor development, that of tickling, the impression may approach the agreeable, its persistence even for a brief period is not pleasurable. Reduced to its simplest terms it conveys the idea to consciousness of some insect impinging on or crawling over the skin, immediately succeeded by the involuntary desire or effort to dislodge the offender. So vivid is this conviction in some cases that the individual can scarcely be persuaded that there is not a material cause for his annoyance. Hence the term formication or the procession of ants has been attached to a variety. The specialised sense of touch still retains traces of the time when it was not differentiated from common sensation. We may therefore interpret itching as "a functional disorder of innervation which may be produced by external or internal causes alike." Itching or pruritus is essentially a surface sensation, and Bronson, who has most deeply studied the subject, is disposed to locate it in the epidermis. Assuredly its most marked developments are to be found in those lesions which mainly affect the epidermis. Thus the tingling characteristic of nettle-rash may precede the eruption of the wheal if it is not coincident with its appearance. It is just when an abrasion or a wound is finally cicatrising that itching, popularly regarded as a favourable sign, is experienced. Pressure is inimical to itching. When slight it may not exert much influence in this direction, but firm pressure, however exercised, annuls the sensation for the time. The tormenting itching in scabies is caused by the female acarus driving her tunnel through the epidermis.

We may have intense itching with entire absence of any definite skin disease, and this we may call essential pruritus, or we may have it in direct association with some accredited lesion or integumentary ailment. It occurs as a superficial manifestation in both. When encountered over or near varicose veins it is the surface innervation which is disturbed. The proximate cause of itching is closely connected with that of urticaria, more particularly that form known as urticaria factitia or dermographism, where the vaso-motor mechanism is so sensitive that wheals can be evoked at will by friction, such as drawing the edge of a paper-knife across the skin, with slight pressure. Unna has enunciated the theory that itching is due to a disproportion between the pressure of the tissue juices and that of the limiting corneous layer. He explains the relief afforded by scratching as at least partly referable to the escape of serum from lacerations inflicted by the nails, temporarily equalising the tension. But this theory will not wholly account for itching in cases where there is no evidence of œdema, as in senile pruritus, where the integument is often fine, polished, and satiny. In such individuals, in addition to atrophy and thinning of the skin, there can almost always be traced an inactivity or complete arrest of perspiration. Many have never perspired freely all their lives; in others the diminution has been so gradual that a point is reached where the skin scarcely becomes moist even in hot rooms or warm weather. That this has much to do with the incidence of the pruritus is corroborated by the evidence of treatment, for such remedies as tend to restore sweating *pari passu* relieve the pruritus. We must probably assume in addition wholly to account for the pruritus that there is likewise a degree of hyperæsthesia, an undue sensitiveness of the skin, so that contacts which in ordinary circumstances would be well and easily borne in such persons evoke this peculiar form of irritability. Some are disposed to hold the view that all cases of pruritus senilis are examples of pediculosis, but while pediculi vestimentorum may, and do, find a suitable soil in the integument of the aged, yet there are numerous instances of general itching in the elderly quite unconnected with the presence of these parasites. We must bear in mind also that in old people inactivity, solitariness of life, and enforced leisure, make them conscious of impressions which passed unnoticed when busily engaged. Scratching indulged in to mitigate the sensation is not in itself harmful; it is the degree to which it is carried, not the act itself which is injurious. In civilised life we all, more or less designedly, habitually scratch our skins. The rough towel, the flesh brush, the loofah, used in our bath or after it, by the friction they exercise, have the salutary effect of ridding us of the effete cells of the horny layer of the epidermis. This of course presupposes a healthy and resistant skin, but in disease the same action is deleterious, since the resistance of the organ attacked is lowered. In lichen planus itching is a feature, yet here less harm is done by scratching than in most other ailments. The pigmentation left behind by the involuting papules may certainly be partly due to scratching, just as the darkening of the integument so constantly met with in the case of tramps infected with pediculi. It is singular that there are some diseases almost wholly limited to the epidermis where itching is not complained of. Of such we may cite as examples a parasitic disease, pityriasis versicolor, and an inflammatory one, pityriasis rosea.

But generalised pruritus may be set up by parasites. Lice very commonly occasion it in the aged, or in the alcoholic and careless, even though not old. Since the pediculus lives in the clothes and only attacks the skin for the purpose of feeding, the insect selects situations where the linen lies close to the surface, as at the neck or waist, or where it is little likely to be disturbed, as the back between the scapulæ. As this is a region only with difficulty accessible to the fingers the monks who occupy the monasteries of Mount Athos make and sell special instruments called "back scratchers," probably to relieve the irritation thus caused. These consist of a long, narrow, slightly curved piece of wood bearing at the extremity a minute carved human hand. Bundles were lying for sale in the bazaars of Karyes the capital. Curiously enough, these implements seem unknown in the monasteries in the Peloponnesus, though it is more than doubtful if ablutions are any more frequent, at least inquiries for specimens were fruitless. Fleas come next to lice as a cause of itching from this source, but even the human flea, much less those derived from domestic animals, does not permanently live on his host. The attacks, therefore, of this variety are brief, and idiosyncrasy exerts an important influence. The bug, repulsive as it is, does not occasion any very severe itching though the red bumps it causes are for a time both annoying and disfiguring.

The next stage in itching lies in its occurrence in association with some definite skin disease, and the one with which it is most especially conjoined is undoubtedly eczema. Not with all forms of eczema, however. It is met with in acute erythematous, papular, and scaly eczemas, while it is almost wholly absent in the vesicular and weeping forms. Here Unna's theory finds its strongest confirmation. The adjustment between the pressure of the tissue juices and of the corneous epidermis is disorganised. In many types of chronic eczema itching is also well marked though absent in that attacking the palms and soles. The thinner the epidermis is naturally the more pronounced is the itching in chronic infiltrated eczema. It persists, too, after apparent cure, and is answerable for relapses in eczema in not a few instances, for the scratching which it gives rise to lights up the dormant ailment into activity.

Like insects, plants may set up a dermatitis and induce itching. The rôle played by the primula obconica and sinensis is now well recognised, but Dr. Norman Walker has observed that the humea elegans may, in certain individuals, act in a similar manner.

We know nothing of the true cause of mycosis fungoides, but the early eruptions, eczematous or lichenous in character, which may long precede the evolution of the tumours, raise our suspicions by the persistent itching which accompanies them, an itching which yields to no remedy except the x rays, and even then the relief so afforded is not with certainty lasting. The itching encountered in dermatitis herpetiformis distinguishes it from pemphigus and other

bullous or vesicular disorders. Poisons generated from within account for the itching in severe jaundice and in Hodgkin's disease. In like manner we may explain the itching occasionally met with in women at or after the menopause, a vaso-motor disturbance connected with the cessation of a long existent and important function and not improbably due to a degree of auto-intoxication from deficient elimination.

While itching may, as we have seen, be experienced over large tracts of the surface, it is quite as frequently restricted to certain localised areas, and examples of this constantly come under our notice. One of the most common is that known as pruritus ani, an aggravating, sometimes an intolerable, irritation about the seat. Men are much more liable to this than are women, or at least more of our patients who complain are of the male sex. Some are sedentary and studious, others active, restless, or nervous. It is in all cases a symptom, but we cannot in every one determine with exactitude the latent cause. Thread worms in the rectum, piles (external or internal), fissures, prostatic disorders may, one or all, be incriminated. But in many the liver is assuredly at fault. Not always primarily, as one may have to go further back and discover in some cardiac trouble the source of the portal repletion or congestion. A simple catarrhal state of the hepatic ducts may be traced in not a few instances. Again, itching at the anus may be a symptom of cancer within the pelvis. In fact, we have in many otherwise obscure cases a dilated and tortuous condition of the submucous veins of the rectum, which finds its expression as itching at the anus. The scratching indulged in leads to a white, sodden, and thickened condition of the neighbouring integument, accompanied with heat and moisture, intensifying the discomfort. You are all sufficiently familiar with the characters assumed, which require no further elaboration.

Another distressing variety is that which affects the vulva. The labia become swollen, leathery, and hard, and the patient has often a worn worried expression, owing to lack of sleep, and also to the difficulty she has in refraining from rubbing and scratching the parts in public. Here one must be on the outlook for glycosuria, not necessarily diabetic, as this form is perhaps more aggressive in stout, gouty women than in the subjects of veritable diabetes mellitus. It is thus often eminently curable. But it may occur quite apart from saccharine urine, and some of the most severe and obstinate examples I have met with have been in women approaching the menopause, whose urine did not show a trace of glucose.

Lastly, there are some minor forms. One occurs under the fourth toe, and between it and the adjoining ones, and is particularly troublesome at night when the stockings are removed. Though the mucous surfaces themselves hardly itch, yet this is now and again observed within the meatus of the ear, inside the nostril, and on the surface of the tongue, but scarcely to such an extent or lasting so long as to need any treatment.

There are but a few points in the diagnosis of itching which call for remark. In all cases of generalised itching the possible existence of scabies, or the presence of insect pests, or the chance of the irritation having been started by plants must ever be borne in mind. No station in life, no correctness of habits or apparent care as to the person, should be allowed to prejudice our judgment. From circumstances of the nature of which we cannot be ourselves cognisant, and without even the knowledge of the sufferer, he or she may have been exposed to the chance of contracting the parasites, or have been in contact with the noxious leaf. In all our inquiries the utmost tact requires to be exercised, and we should omit nothing in our examination so as to arrive at the knowledge which will enable us to afford relief.

In the treatment of itching one cardinal proviso emerges. One cannot treat it solely as a substantive lesion without risk of failure. All the circumstances must be taken into account. The cause has to be diligently sought for, the locality considered, the individual studied, and accessory conditions given due weight. In the cases where there is itching without definite integumentary disturbance, as in senile pruritus apart from pediculi, some medicated soaps will be found useful. Menthol soap is that most frequently applicable. It acts by substituting the sensation of cold for that of itching and in mild instances often gives prompt relief. Nicotine as nicotiana soap, as recommended by Taenzer and Unna, deadens the hyperæsthesia of the nerve terminals in the epidermis, but it should be employed with caution and never over wide areas, else toxic symptoms may arise. Naphthol soap is indicated in similar states, and not only lessens undue sensitiveness but tends to ward off the attack of parasitic insects. When the surface is dry with slight desquamation of branny particles warm baths taken under blood heat and containing some freshly prepared starch jelly, followed, after gentle drying with a soft bath towel, by the inunction of glycerine of starch thinned down by the addition of a double proportion of glycerine, has proved extremely valuable in my hands in climacteric cases. Should these measures prove insufficient we can in most cases of pure senile pruritus obtain a permanent cure by giving a course of subcutaneous pilocarpine injections administered each night and extended over a couple of weeks. This usually restores the sweat gland system to functional activity and with the re-establishment of cutaneous exhalation the trouble ceases. The vests worn next the skin should be of silk, Indian gauze, or linen, and over these thicker and warmer ones may be put according to the season of the year or in the case of those whose circulation requires additional protection. When pediculi are discovered or their presence is strongly suspected, besides washing with carbolic or storax soap, accompanied by a thorough change of body and bed linen, the soil may be rendered unattractive by directing the patient to wear next the skin, day and night, a muslin or flannel bag containing fragments of rock sulphur. The heat of the body slowly volatilises the sulphur, it is converted into sulphurous acid by the oxygen of the air, and so provides an atmosphere round the person which acts as an efficient deterrent to the onslaughts of the pediculus. It must be borne in mind that the pediculus vestimentorum occasionally attaches its ova to the lanugo hairs; to prevent these hatching and so germinating a fresh colony it is well to rub some ordinary paraffin oil over the trunk and limbs or to anoint with unguentum staphisagriæ for a few days. Neglect of this is the source of the belief in spontaneous generation of lice and simply explains why the insects so constantly reappear, though all other precautions have been taken.

We cannot dissociate the treatment of itching in eczema from that demanded by the conditions of the disease in each actual case, but as far as possible we ought to combine antipruritic with anti-eczematous remedies. In eczema the horny layer is soft and porous and thus deficient in its natural power of resistance. Since it is in the dry and the chronic forms of eczema in general, and again in all varieties immediately preceding or subsequent to apparent cure, that itching most markedly asserts itself, two indications for our guidance emerge. One of these is that the new and delicate epidermis dries very rapidly, and hence minute fissures form in it, and by these cracks the atmospheric air gains access to the deeper strata and so acts as an irritant to the spongy cells. It is in this layer of cells that the cutaneous sensory nerve fibrils terminate and the unhealthy state of the skin renders these specially sensitive. Thus it follows that lotions, always the simplest and most agreeable preparations to employ, which in drying deposit an impalpable and neutral powder, take the premier place in our armamentarium. The coating in process of formation insinuates itself into the chinks, and not only occludes them but at the same time promotes exsiccation and so diminishes itching. Calamine lotion with the addition of a drachm of boric or in some cases of carbolic acid, here proves very valuable. In the essentially dry forms perhaps even more useful is one recommended by Boeck of Christiania, which possesses likewise astringent and sedatives properties:—

Talci	
Pulv. amyli	āā 100·0
Liq. plumbi subacetatis dil.	
Sol. acidi borici in aquâ 1%	
Glycerini	40·0
Aq. camphoræ	250·0

This should be well shaken before being used, as it is apt to cake owing to the starch, and painted uniformly on with a stiffish paste brush since the ordinary camel hair one is too soft and readily clogs. The lotion will relieve the itching for about four or more hours and can then be re-applied.

The second indication is to supply pressure, which the loose cells of the extemporised corneous layer do not yet efficiently provide. Hence, where it can be used, Unna's zinc glycerine jelly furnishes this, prevents scratching, advances the cure of the eczema, and obviates itching. The most approved formula runs thus:—

Gelatinæ albæ	30·0
Zinci oxidi...	30·0
Glycerini	50·0
Aquæ	90·0

The glycero-gelatin so compounded is best dispensed in a narrow and deep tin can. This when placed in boiling water allows the jelly to liquefy rapidly, and when it has reached the consistence of milk it can be conveniently painted on the skin. While it is setting the surface should be touched with absorbent cotton-wool, enough of which attaches itself to form a felt-like coating. This plan is especially serviceable in those localities which have been mentioned as apt, from the thinness of the integument, to be seats of troublesome itching, as the bend of the elbow and the ham.

Weak tarry lotions or varnishes are most advantageously employed in the final stages. Patients admit that their eczema to appearance is well, yet complain bitterly that the itching still continues. Then painting with a solution of coal tar in acetone may be helpful.

Picis carbonis	ʒi.
Benzol	ʒiv.
Acetone	ʒii.

The solution should be filtered to get rid of particles of undissolved tar, and then a clear brownish fluid is obtained, a thin layer of which is not disfiguring.

In almost all forms of itching in eczema much temporary relief can be got from sopping the part with very hot water for a few minutes, then drying without friction with a fleecy towel. One of the lotions mentioned may be applied immediately to maintain the sedative effect. The itching associated with lichen planus yields, slowly no doubt, to the administration of small and repeated doses of tartrate of antimony in solution, but it is greatly allayed by painting with Boeck's lotion, already mentioned, or by smearing the affected parts, if the eruption is limited in area, with cold cream containing a drachm of chloral camphor to the ounce.

The irritation, culminating in itchiness produced by poisonous plants, may be merely erythematous, may proceed to definite dermatitis, with œdema, redness, and heat, or vesiculation may occur. In all these forms the most appropriate treatment is that accorded to burns from caloric, plus the neutralisation of the poison introduced into the skin, which is more or less acrid. Hence something of the nature of carron oil is specially grateful:—

Ol. amygdalarum } Liq. calcis ... ... }	ää ʒiii.
Zinci oxidi ... ... } Cretæ praeparatae }	ää ʒiv.
Acidi borici	ʒi.

This suits the erythema and the simple dermatitis. Should blisters or bullæ form then there is no better way of dealing with the trouble than by dusting freely with a bland powder—

Acidi borici pulv.	grs. xxv.
Talci pulv.	ʒi.

and enveloping the part in absorbent cotton-wool, secured by a bandage. When the surface has dried up the hard epidermic masses which accumulate must be allowed to separate spontaneously, not picked off prematurely, as is very apt to be done, with a false idea of hastening the cure. With the removal of the cause—cessation of contact with the obnoxious plant—and proper management one might conclude that the irritation would disappear, but this is by no means always the case, and hence prolonged care is frequently necessary to get quite rid of the itching in such cases.

In dealing with pruritus ani one has to remember that the state revealed to us on examination is not the original one. The condition of the neighbouring skin has been much altered and modified by scratching, and these secondary phenomena call for special attention. It has been stated that frequently the liver is at fault and hence hepatic stimulants are indicated. Not, however, those coarse, reputed mercurial cholagogues, as calomel, grey powder, or blue pill, relics of an effete system of indiscriminate drugging, still far too often prescribed, but such as euonymin; bismuth, soda, and rhubarb; or the compound sulphur lozenge of Garrod; mild alteratives, far more efficient than the older and rougher ones. Indeed, in all cases it is desirable to procure, either naturally or artificially, an easy, regular, and soft movement of the bowels, avoiding constipation on the one hand as much as anything approaching diarrhœa on the other. This end is reached better by sulphur in some combination than by aloes or cascara. Compound liquorice powder, therefore, suits many persons; others do better with one of the natural aperient mineral waters containing sulphates, as Hunyadi Janos or Franz Josef. When there are internal piles a nightly suppository of two grains of hamamelin, continued for a couple of weeks, usually renders them no longer a source of trouble. If there is more general irritability of the rectal mucous membrane, with dilated and varicose venules, an enema composed of two drachms of liquor bismuthi in two ounces of freshly prepared, thin, warm starch, administered at bedtime and retained as long as possible, will prove soothing and healing. Thread worms, if discovered, require lavements of salt-and-water or lime-water. The patient should be advised to sit habitually on a hard and flat seat and to discard cushions on his chair. Locally, Lassar's paste, in which one drachm of the zinc is replaced by as much oxychloride of bismuth and without salicylic acid, applied very thinly, is appropriate in most cases. Sometimes a cold cream, having a lanoline base, in which is incorporated a little ammoniated mercury, suits even better:—

Lanolini	ʒv.
Ol. amygdal.	ʒiiss.
Aq. camphoræ	ʒiiss.
Hydrarg. ammoniati	grs. vi.

Immediate temporary relief to the itching is also obtained by occasional painting with a solution of nitrate of silver, ten grains in an ounce of spiritus ætheris nitrosi. At night the disposition to scratch may be prevented by manacling the wrists with a skein of wool arranged as a clove hitch and fastened to the bedstead. In obstinate cases one or two brief exposures to the x rays have been found to exercise a markedly curative effect, but their application must be directed with great caution and circumspection. Finally, for detergent purposes paper, even the finest, is inapplicable, water and a soft sponge being substituted.

In pruritus vulvæ, when glycosuria is present, the condition should be treated on the recognised lines. In the gouty form met with in middle-aged women the mineral waters of Contrexeville and Vichy have proved of service. The sugar has in many cases wholly and permanently disappeared under their use *between meals*, combined with a pill of codeine, lactucarium, and nux vomica. Locally boric acid in a rather stiffish lanoline cold cream has, as a rule, answered best. In the non-glycosuric cases painting with the solution of nitrate of silver already mentioned, washing with menthol soap, and the application of the same boric cold cream have in most cases in time proved curative. At night a fold of Beiersdorf's zinc ichthyol salve muslin is both cooling and comfortable, if carefully introduced.

For itching under and between the toes, since this largely depends on the decomposition of the perspiration secreted there, careful and daily ablution is to be practised, and after drying a tumenol ointment annuls the sensation. It consists of 48 grains of tumenol in an ounce of cold cream; the sole disadvantage is the dark colour, but this does not so much matter in the case of the feet.

If in the course of your reading you may turn to any of the larger treatises on skin diseases in general, or to some article or lecture appearing in the periodicals on itching in particular, you will find a long array of remedies formulated, and you may perhaps feel disappointed that so few comparatively have been mentioned to-night. It is almost a certain inference that the obstinacy may be gauged by the number of curative agents tabulated, and itching is no exception. It *is* an obstinate symptom, as the fact of your presence here to listen to what I can tell you testifies. You desire to learn all you can about it. But Mr. Jonathan Hutchinson has sagely observed that it is preferable to know how and when to employ a few remedies than to have a superficial acquaintance with a great many. I have given you the formulæ for, and indicated the mode of using, those

which have proved most efficient in my hands Should these disappoint you, and I warn you they will—though I trust not frequently—do so, then try some one or other of those suggested in your text-books. All that it is in my power here to accomplish is to lay down the broad lines on which to advance, bearing in mind that there are numerous other paths available to attain the goal.

A CASE OF EMBOLIC (? THROMBOTIC) ATELECTASIS OF THE MIDDLE AND LOWER LOBES OF THE RIGHT LUNG; SURVIVAL.

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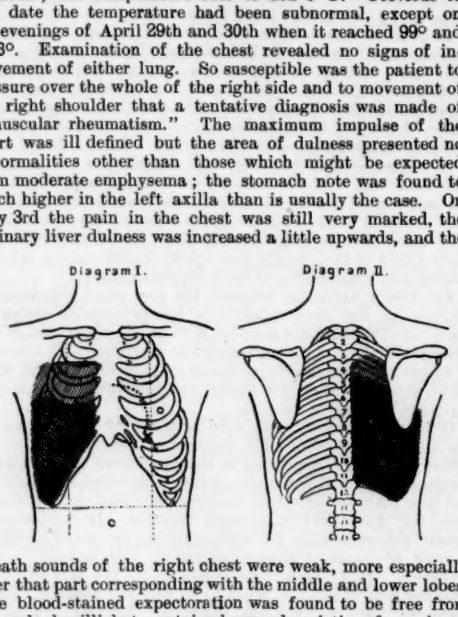
SURGEON IN CHARGE OF OUT-PATIENTS, ST. THOMAS'S HOSPITAL, AND SURGEON, HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET.

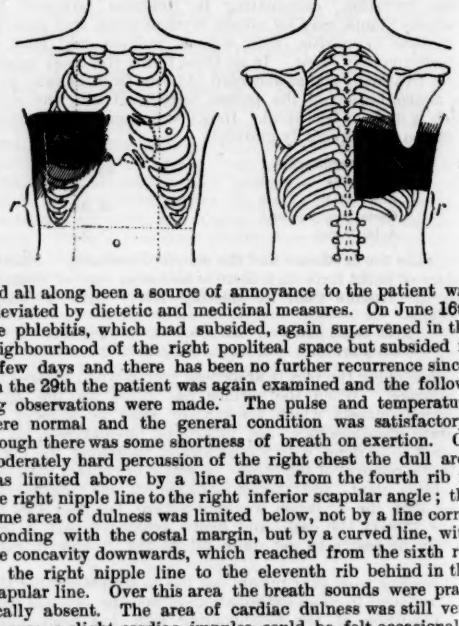
WE publish an account of this case because of the unusually large amount of the right lung which had collapsed as a result of embolic (? thrombotic) partial occlusion of the pulmonary artery and because we are unable to find any account of a similar occurrence with survival.

The patient, a gentleman who was emphysematous and had been suffering from phlebitis of the legs for the previous five or six years, came under the care of one of us on April 16th, 1907. The patient had not been feeling well since February of the same year and had found it difficult to perform his duties. When he came under observation there were signs of phlebitis, more especially of the right leg; the usual methods were adopted for the treatment of this condition. The local symptoms abated and it was felt that with a little longer rest in bed the phlebitis would disappear. On May 2nd, however, the patient was seized with very severe pain in the right chest, with dyspnœa, slight hæmoptysis, and some cyanosis; the temperature rose to 101·6° F. Previous to this date the temperature had been subnormal, except on the evenings of April 29th and 30th when it reached 99° and 99·8°. Examination of the chest revealed no signs of involvement of either lung. So susceptible was the patient to pressure over the whole of the right side and to movement of the right shoulder that a tentative diagnosis was made of "muscular rheumatism." The maximum impulse of the heart was ill defined but the area of dulness presented no abnormalities other than those which might be expected from moderate emphysema; the stomach note was found to reach higher in the left axilla than is usually the case. On May 3rd the pain in the chest was still very marked, the ordinary liver dulness was increased a little upwards, and the



breath sounds of the right chest were weak, more especially over that part corresponding with the middle and lower lobes. The blood-stained expectoration was found to be free from tubercle bacilli but contained several varieties of cocci and bacilli (Gram-positive and Gram-negative). On May 4th, 5th, and 6th the pain was still present but less in degree; it failed to respond to the action of aspirin, &c. On the 7th fluid was suspected at the base of the right chest as the dulness had gradually extended upwards to the spine of the scapula behind and to the second rib in front. (Diagrams I. and II.) Movement of the right chest was very limited and the breath sounds and vocal fremitus over the dull area were almost suppressed. On the 8th an exploratory puncture was made of the right chest and two ounces of yellow blood-stained fluid were removed. Each cubic millimetre of the fluid contained 560,000 red corpuscles and 31,000 white corpuscles. The analysis of the latter showed small lymphocytes 48·2 per cent., large lymphocytes 11·8 per cent., polymorphonuclear cells 32·4 per cent., and endothelial cells 7·6 per cent.; no organisms could be detected in film preparations and 10 cubic centimetres of the fluid injected into a guinea-pig gave no evidence of tuberculosis at the end of a month. On May 9th an attempt was made to remove the rest of the fluid, using a larger aspirating needle. No fluid, however, could be obtained and the lung could be felt not far removed from the chest wall. A little doubtful friction sound could be heard at the right base. On the 19th the signs of dulness over the greater part of the right lung remained unchanged and there was increased difficulty in locating the exact position of the heart.

From this date onwards no active measures were taken, the patient being kept in bed and allowed to move as little as possible. The signs of dulness over the right chest gradually underwent some reduction from above; tubular breathing and increase of vocal resonance developed in the neighbourhood of the right inferior scapular angle; the movement of the right chest remained limited, although the pain had disappeared. The temperature had reached normal by May 10th but again rose on the 13th and remained slightly elevated during the rest of his stay in the nursing home. The pulse which before the episode of May 2nd had been normal rose to 112–120 on occasions of extra pain; ordinarily it was 80–84. On May 27th, owing to progressive loss of weight and the maintenance of the elevated temperature, it was decided that the patient should be removed from the "home" and be placed under the care of Dr. E. T. M. Tunnicliffe of North Finchley. The same methods were continued combined with open-air treatment. Eructation which



had all along been a source of annoyance to the patient was alleviated by dietetic and medicinal measures. On June 16th the phlebitis, which had subsided, again supervened in the neighbourhood of the right popliteal space but subsided in a few days and there has been no further recurrence since. On the 29th the patient was again examined and the following observations were made. The pulse and temperature were normal and the general condition was satisfactory, though there was some shortness of breath on exertion. On moderately hard percussion of the right chest the dull area was limited above by a line drawn from the fourth rib in the right nipple line to the right inferior scapular angle; the same area of dulness was limited below, not by a line corresponding with the costal margin, but by a curved line, with the concavity downwards, which reached from the sixth rib in the right nipple line to the eleventh rib behind in the scapular line. Over this area the breath sounds were practically absent. The area of cardiac dulness was still very obscure, a slight cardiac impulse could be felt occasionally in the fourth space in the left nipple line; the stomach note was still unusually elevated. (Diagrams III. and IV.)

The patient was allowed to leave for another part of the country and ultimately went to Dresden, being free from pain

and cyanosis; dyspnœa was still present. At no time has clubbing of the fingers been noticed. During the past winter the patient has been under medical care at Dresden and effervescent carbon-dioxide baths and moderate exercises were prescribed. On Feb. 3rd of the present year the patient was again seen by us. He is quite free from all dyspnœa even on great exertion, and he has completely regained his weight. The condition of the chest is but little altered from what was observed on June 29th, 1907, the difference being that the dulness previously observed is now a little lower and the upper right chest is a little more resonant than normal. The obscurity of the cardiac dulness is maintained.

Radiographic examination.—This was carried out by Mr. R. Higham Cooper on March 3rd, 1908. The shadow shown by the heart was normal in extent and position, and the diaphragm reached to the level of the fifth rib in the nipple line on both sides during expiration; posteriorly during expiration the dome of the diaphragm forming the upper limit of the liver reached as high as the seventh rib in the scapular line.

Comments.—In reviewing the illness and the subsequent developments it appears to us that on May 2nd, 1907, an embolus was dislodged from one of the veins of the lower extremities or a thrombus[1] was dislodged from the pulmonary artery and was driven into the lower division of the right pulmonary artery—i.e., into the branch supplying the middle and lower lobes of the right lung. These two lobes became atelectatic and the space formerly occupied by them when fully expanded was filled up by the ascent of the liver and right half of the diaphragm, and also probably by compensatory emphysema of the left lung in the direction of the right chest, accompanied by the upward dislocation of the stomach and left half of the diaphragm. The area of cardiac dulness was, especially towards the left, obscured by the compensatory emphysema of the left lung, the heart itself being little altered, if at all, so far as clinical examination could determine, in its normal position. We believe that the upper lobe of the right lung is undergoing compensatory hypertrophy and we anticipate that in the course of time it will be able completely to occupy the space formerly filled by the three lobes of the right lung if it has not already almost done so, as the diaphragm as shown by the x rays now during expiration reaches the height of the fifth rib in the right nipple line, the level reached in a normal individual, though probably the normal level in our patient owing to his original emphysema is lower. This view is supported by the observation by one of us that in a patient who died from an acute illness the left lung consisted almost entirely of the upper lobe of the definitive lung, the lower one being represented by an attenuated mass of atelectatic lung substance with a complete but small system of bronchial tubes, the whole not being much larger than a hen's egg.

A blood examination made 19 days after the accident of May 2nd, 1907, showed 5,687,500 red corpuscles and 9375 white corpuscles per cubic millimetre; the relative proportions of the latter were normal; the hæmoglobin amounted to more than 100 per cent., from which it may be surmised that the hæmoglobin had increased beyond the normal limits in response to a reduction of the normal lung substance

We are unable to find any reference to any account of survival after such an extensive obliteration of lung substance by an embolus or thrombus. Cohn refers in the section of his work[2] dealing with embolus of the pulmonary artery to two cases (Cases 1 and 14) in which *at the post-mortem examination* old or partly old clots were found in the pulmonary artery, but there is no information which would lead us to understand that the actual deposit of the embolus had taken place and had been clinically observed at a time as long as 11 months previously, as in our case. Our case now shows no signs of distress in breathing and in fact he is quite well. We believe that the reason why in this case the heart has not been dislocated into the right chest, as happens so often in tuberculosis and fibrosis of the right lung, is to be found in the possibility that the diaphragm, unaltered and unhampered by inflammation as it was, was readily able to yield and so allow the liver and the left lung instead of the heart to fill the place of the collapsed lung, or it may be that the mediastinal structures in our patient are more firm and less capable of actual displacement.

[1] Vide paper by Dr. C. R. Box, Transactions of the Clinical Society of London, 1906, p. 189.

[2] Klinik der Embolischen Gefässkrankheiten, Berlin, 1860.

NOTES ON THE THERAPEUTIC APPLICATION OF STOCK VACCINES IN THE TREATMENT OF BACTERIAL INFECTIONS.

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OPSONINS is the name given by Wright and Douglas to those protective substances in the blood serum in the absence of which leucocytes are only capable of phagocytosis in a very limited degree. As immunity to bacterial infections depends largely on phagocytosis opsonins play an extremely important part in producing immunity. It has been shown that after recovering from a microbic infection the proportion of protective substances, or opsonins, in the patient's serum connected with that particular infection is higher, to a greater or less extent, than in the serum of a normal healthy individual. It has also been shown that if an inoculation of killed microbes be made into a normal individual the proportion of opsonins in his serum will rise as compared with the serum of a normal individual not so inoculated.

In the vast majority of microbic infections the physiological mechanism of immunity reacts so quickly to the infection that an adequate supply of protective substances is brought to the site of infection and the phagocytes are enabled to cope with the microbes. Such an infection will rarely be attended with symptoms either objective or subjective, and will therefore be unnoticed. In cases which are not so aborted and which therefore become noticeable as local or general infections, either the infection has been too virulent for the normal mechanism to cope with or for some reason, such, for example, as great exhaustion due to exposure or local injury, the normal mechanism for the production of immunity is deficient. Therapeutic inoculation supplies a method of artificially producing immunity and the object of this paper is to indicate the potentialities and limitations of therapeutic inoculation in the treatment of microbic infections, generally with the assistance given by the frequent estimation of the opsonic index but more especially without the aid derived from the opsonic index.

The opsonic index is the expression of the measure of the phagocytic power produced in a sample of washed leucocytes by the serum of the individual in question, as compared with the phagocytic power induced in a similar sample of leucocytes by the serum of one or more healthy individuals. This latter power is taken as unity, and the index of an infected individual is expressed as a fraction of unity, above or below unity according to the greater or less quantity of protective substances in the infected serum, as compared with the normal serum. The opsonic index then is the measure of the resisting power, as comprised in phagocytosis, of a serum, against the microbe in question.

A *vaccine* is a killed bacterial culture suspended in sterilised normal saline solution, to which lysol to the strength of ¼ per cent. or carbolic acid to the strength of ½ per cent. has been added. Vaccines are accurately standardised by mixing together definite quantities of vaccine and normal human blood of known corpuscular content. Smears are made of the mixture, are dried, fixed and stained, and the numbers of red cells and microbes in many successive fields of the microscope are counted. An estimation of the number of microbes in each cubic centimetre of vaccine is then possible. The cultures are killed by immersion for one hour in a water bath at 60° C., and the sterility having been demonstrated by culture methods a suitable dilution for use is made in rubber-capped sterile bottles for laboratory and hospital use, and in sealed glass sterilised capsules, containing slightly more than one cubic centimetre, for general use.

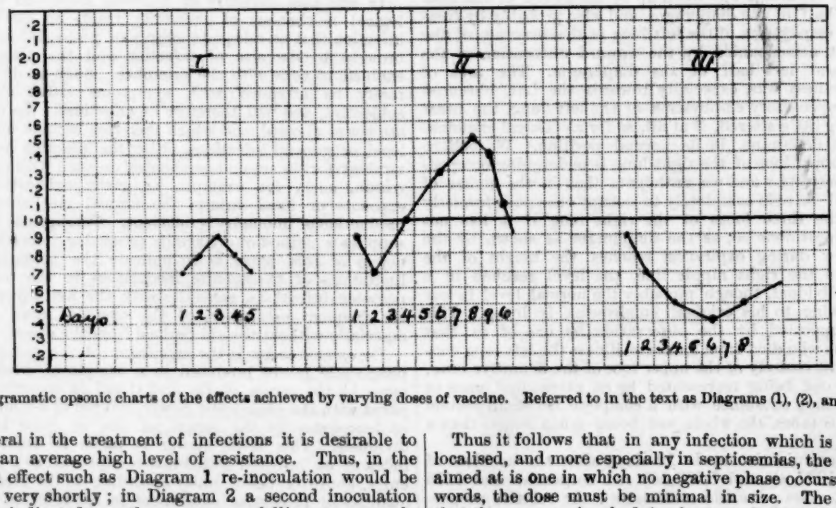
The effect of vaccines on the blood.—The injection of a dose of vaccine into a healthy normal individual produces either (1) an immediate rise in the protective substances, as indicated by the opsonic index; (2) a fall of longer or shorter duration, followed by a rise up to or above normal, in

its turn followed by a fall towards normal; or (3) a fall tending to be more or less permanent according as to whether the dose be small, medium, or excessive. These effects are diagrammatically represented in the appended charts.

The rise in the first case will, though quick, be short lived. In the second case the rise subsequent to the initial fall, or negative phase, will be more prolonged, and having reached its maximum will gradually fall towards the level it was at previous to inoculation. In the third case the fall may be so severe as to last a considerable time, in some cases even never regaining its previous level without a further inoculation of minimal doses of vaccine. All gradations between will occur according to the dose of vaccine, and these varying results are designedly aimed at, according to the nature of the case in hand. There is thus no ideal opsonic curve in general to be aimed at, though in a particular case one particular form of curve may be ideal.

The fall subsequent to inoculation is called by Wright the negative phase, the subsequent rise he calls the flow, and the gradual fall towards normal he calls the ebb, the tides of flow and ebb together constituting the positive phase. In addition a phenomenon has been noted, occurring mainly in auto-inoculations produced by passive congestion and similar measures called the false rise. Here a slight rise precedes the negative phase but it is of small importance.

FIG. 1.



Diagramatic opsonic charts of the effects achieved by varying doses of vaccine. Referred to in the text as Diagrams (1), (2), and (3).

In general in the treatment of infections it is desirable to maintain an average high level of resistance. Thus, in the case of an effect such as Diagram 1 re-inoculation would be necessary very shortly; in Diagram 2 a second inoculation would be indicated, as the curve was falling to normal; whereas a minimal dose of vaccine might be advisable in Diagram 3 when the fall had ceased to bring the resistance back to the initial position.

Within limits it may be said that the duration of the effects produced by any one inoculation varies proportionately to the dose of vaccine inoculated—that is to say, that the longer the negative phase the longer the positive phase will be. However, a point is soon reached beyond which the duration of the negative phase is only increased at the expense of the positive phase, and ultimately no positive phase accrues at all, as indicated in Diagram 3. Here it may be stated that no attempt is made, except in cases of very low resistance initially, to superpose one positive phase upon another without any intervening negative phase. In general, an effect similar to that depicted in Diagram 2 is aimed at, constantly repeated, so that the sum total of the individual effects of a series of inoculations shall result in longer average duration of time of increased immunity and shorter average duration of time of decreased immunity as compared with that of a normal individual.

Before leaving the consideration of the three classes of curves produced by varying doses of vaccine it may be advisable to correlate with the opsonic results certain clinical symptoms and at the same time consider generally the question of dosage. In the case of (1) this in certain conditions would be an ideal curve in the circumstances. Taking, for example, a case of septicæmia, with or without a localised focus, it would be disastrous to induce a negative phase of any duration at all. During a negative phase of only a few hours' duration all the symptoms might be profoundly aggravated, the toxæmia deepened, the temperature raised, and pain, if present, increased, and it is probable that owing to the low protective power on the part of the blood foci of suppuration would be initiated in many hitherto uninfected areas. Obviously in such cases the aim of the immunisator should be to produce a maximum rise in protective substances compatible with an entire absence of negative phase. Nor even if no negative phase be produced should the dose be large enough to delay the elaboration of protective substances. If the dose be of such a size that the above desideratum be fulfilled the temperature should fall, pain and discharge should decrease, and a diminution of any local congestion and swelling that might be present should be noted, and these symptoms would in most cases be sufficiently marked to enable a determination as to re-inoculation to be made. Such cases as the above will usually be comprised in the following—erysipelas, cellulitis, lymphangitis, and puerperal fevers and septicæmias generally, in which, even if the process be more or less localised, a temporary lowering of resistance may be answerable for an alarming increase in the area of the process.

Thus it follows that in any infection which is not strictly localised, and more especially in septicæmias, the curve to be aimed at is one in which no negative phase occurs. In other words, the dose must be minimal in size. The corollary is that the response invoked is short, and therefore reinoculation must quickly follow, even to daily doses. In such cases the opsonic index is of paramount value as a guide, but as indicated above much assistance as to dosage and interspacing may be gained by the general symptoms and local signs.

Apart, however, from such severe cases as have been taken into consideration above, where a temporary lowering of the resistance is absolutely disastrous, it is inadvisable to give such a dose as to cause a negative phase in many chronic local conditions of less severity. To illustrate my meaning I will instance such a case as that of chronic tuberculous lymphatic glands. Such a case might well, and does mostly, show a constant low resisting power, as indicated by several successive tuberculo-opsonic indices of between 0·70 and 0·80. In such a case it would be desirable to aim in the first instance at such a curve as that in Diagram 1, so that a resistance equal to normal might be achieved without any intervening negative phase. A normal index having been thus attained either by one or two minimal doses of tuberculin, larger doses might then be given; an effect being aimed at such as depicted in Diagram 2, which will shortly come under consideration.

In considering those cases in which it is desirable to aim at producing the effect depicted in Diagram 2 we encounter

a much larger class of case than we considered in connexion with Diagram 1. The majority of cases which the immunisator is called upon to treat are comprised in chronic or acute, strictly localised processes. In some the resistance of the circulating blood is actually above normal; in most it is, however, below normal, and is likely to be variable. In other words, the state of resistance of the circulating blood may not necessarily have an immediate effect upon the local infection. Hence, a temporary negative phase, if followed by a more or less prolonged positive phase, will be of no consequence. The practical result is that by giving such a dose that a small negative phase is produced we obtain a positive phase that will probably last seven or eight days, and so the injections may be interspaced by a period of some 10 or 12, or even more, days. In this class of case we may therefore consider the result depicted in Diagram 2, an "ideal curve."

In most cases the negative phase should not last longer than 24 hours. The temperature will be no guide, for most of such cases will be apyrexial, and the indications as to dosage, apart from opsonic indices, will be mainly local. They will be objective and subjective. The subjective symptoms will be some or all of the following: malaise and increased tenderness and pain at the site of the lesion and in bladder cases increased frequency of micturition. Objectively there will be some or all of the following: increase of discharge, swelling, and congestion, and in the case of acne, and such like more or less generalised local infections, an increase in the number of foci of infection, and in bladder cases perhaps more cloudiness due to increased activity of the infective microbe. In short, during a negative phase an increase of those signs and symptoms due to the infection under consideration will be noticed. Such increase should only be noticeable for not more than 24 hours, and subsequently an amelioration should take place.

It is hardly necessary to point out that should any of the symptoms above mentioned be severe it would be advisable to return to smaller doses—that is to say, an endeavour should be made to proceed as in those cases in which Diagram 1 was said to be an "ideal curve." Necessarily inoculations will be more frequent.

In the case of tuberculous lymphatic glands and suppurating acne, which cases are probably the most numerous that one is called upon to treat, in which results such as depicted in Diagram 2 are aimed at, a slight subjective tenderness in the glands or an increase in the number of comedones respectively would not be of importance if lasting for not more than 24 hours, provided they were followed by a positive phase that lasted a week, more or less.

We now come to the consideration of the result of an inoculation as depicted in Diagram 3. With possibly one exception such a result is wholly bad. It is disastrous in acute general infections and it is at the best useless in chronic or acute local infections. The one exception is the case of a furuncle in such a condition of maturity that absorption without suppuration is unlikely to occur. In such a case it may be desirable to give such a dose of staphylococcus vaccine that a marked negative phase is produced during which rapid maturation with breaking down and subsequent evacuation of the abscess occurs.

The foregoing general considerations rest on the experience gained from the results of therapeutic inoculation as carried out at St. Mary's Hospital, where the majority of the inoculations are controlled by a varying number of opsonic indices. Nevertheless it is realised that in a vast number of cases the estimation of opsonic indices must be out of the question, and if it be a choice between therapeutic inoculation without opsonic indices or no inoculation at all, then therapeutic inoculation undertaken without indices most certainly is indicated. Moreover, we have now the accumulated experience of several years to generalise upon—an experience which takes cognisance of upwards of 15,000 opsonic estimations per year, carried out by the staff of the Department of Therapeutic Inoculation at St. Mary's Hospital. As the result of this experience the practice of vaccine therapy is becoming in certain directions more crystallised. Though we are more inclined to dispense with opsonic indices in the treatment of staphylococcal lesions than in any others, vaccine therapy without opsonic indices need not be confined to the treatment of such lesions, but may be applied to some cases of tuberculous, streptococcal, and gonococcal lesions as well as to the preventive inoculation of typhoid fever. For this purpose vaccines are prepared, standardised, and put up in bulbs of a little over one cubic centimetre each at St. Mary's Hospital and are obtainable through Messrs. Parke, Davis, and Co. These vaccines are precisely the same as are regularly used at St. Mary's. It is to be understood that the following statements are the outcome of the experience derived from the treatment of a large number of patients in hospital and in private, treatment which has almost invariably been controlled by frequent estimations of the opsonic index, and the writer in no way relinquishes the conviction that the best use of bacterial vaccines will always be made when the effects of each dose are ascertained by means of the opsonic index.

Having thus briefly considered the general effect of the inoculation of bacterial vaccines, it is advisable to pass to the consideration of applying the principles as above sketched out to the treatment of individual cases, or classes of case, and this can best be done under two main headings: (1) Diagnosis of the microbe at fault, its isolation and culture, and the preparation and standardisation of a vaccine; and (2) the estimation of the amount constituting a correct dose and the determination of the correct period that should elapse before re-inoculation.

1. For the complete conception of bacteriology indicated in the above subheading standard works on the subject must be consulted. Here it is only necessary to point out the elementary factors to be considered. From clinical experience many common lesions are always associated with certain micro-organisms and where such a comparative certainty exists it is sufficient to obtain the appropriate vaccine and proceed with inoculation. Such common diseases may be tabulated as follows, though no completeness is aimed at:—Staphylococci are mostly concerned in furunculosis and carbuncle, osteomyelitis, sycosis, and suppurating acne. Frequently in eczema and whitlow and occasionally in infective endocarditis and septicæmias. Streptococci are mostly concerned in erysipelas, puerperal septicæmia, septic endocarditis, lymphangitis, and most forms of cellulitis. The tubercle bacillus is concerned in many chronic local joint, glandular, and osseous swellings, and many skin lesions, besides phthisis, tuberculous peritonitis, and frequently in infections of the genito-urinary system. Thus in many lesions met with in everyday practice experience tells us, without precise bacteriological procedure, what is the probable causal microbe.

A few details as to the technique carried out where the diagnosis is not obvious may be indicated. Any discharge from the lesion can be directly examined by an ordinary smear preparation, stained either by a simple basic stain or by Gram's method. If more than one organism be present an endeavour must be made to determine which is the immediate pathogenic agent. Thus a mixture of staphylococcus and streptococcus usually leads one to the conclusion that the streptococcus is the causal agent of the lesion; should, however, an exhibition of streptococcus vaccine not be followed by amelioration one would then give staphylococcus vaccine or a mixture of both. Where, however, it is possible to have recourse to opsonic indices the question may be settled conclusively. If the index be normal to the staphylococcus isolated from the lesion and abnormal to the streptococcus the latter is certainly wholly or mostly responsible for the lesion. A septic endocarditis or other septicæmia can, in the absence of any obvious primary or secondary lesion, only be with certainty diagnosed by making a blood culture. To do this about 10 cubic centimetres of blood are taken with all aseptic precautions from a vein, usually and preferably the median basilic; about two cubic centimetres of blood are directly introduced into each of four tubes of sterile broth. One cubic centimetre may be introduced into a sterile flask of peptone water if typhoid fever, paratyphoid or an infection due to a bacillus of the colon group, is suspected, and a portion may be spread on to the surface of an agar slope. If the organism be present in the blood it will in all probability grow in one of the media mentioned above. Subcultures are made and a vaccine is elaborated. Such measures, however, as a blood culture can only be carried out satisfactorily by a practised bacteriologist.

Apart from blood infections which may be diagnosed by means of blood cultures, many lesions may present themselves for treatment the cause of which is obscure. In such the opsonic index is of the greatest value, but it is beyond the

scope of this article to do more than just indicate the procedure to be adopted.

As pointed out by Dr. John Freeman, the phenomenon of auto-inoculation is often observable where a circumscribed local infection is subjected to such treatment as to cause a temporary increase of circulation through the part. Such increased blood-flow may act in one of two ways, or in both ways at once. It may carry into the general circulation a greater or less amount of the products of the microbe, or of the microbe itself. If this be not excessive results comparable to those observed after an ordinary inoculation of bacterial vaccine occur; that is to say, a short negative phase followed by a positive phase and subsequent fall towards the pre-existing condition will occur and may be demonstrated if the opsonic indices to the organism in question be measured. Secondly, such increase of local circulation may cause an increased outflow of lymph, whereby a greater quantity of protective substances are carried into the infected areas and healing tends to result.

The phenomenon of auto-inoculation may be made use of for the purpose of diagnosis. An obscure joint swelling may be so treated as to cause an increase of the local circulation when, if tubercle be present, a variation in the tuberculo-opsonic index will occur, or if gonococcus be the cause a variation will occur in the opsonic index to the gonococcus. An enlarged lymphatic gland may be carefully massaged and the blood examined before and after massage. If a variation of wide dimensions in the tuberculo-opsonic index occur tubercle is the cause of the swelling, or at least is present as a secondary infection. A variation to be diagnostic should extend over a distance at least equal to three-tenths of unity, unity being taken as the opsonic index of the normal healthy person. Thus a variation from 0·8 to 1·10 would be considered strong presumptive evidence of infection. The presumption is the greater if a number of opsonic indices when plotted out as a curve produce a curve without irregularities. Again, a high opsonic index is at all times more suggestive of infection than one below normal. It is to be pointed out that general and indiscriminate massage of infected joints or lymphatic glands is not advocated, each case being weighed on its own merits. At St. Mary's Hospital we constantly use Bier's method of passive congestion as a means of producing a diagnostic auto-inoculation. Cautious exercise of a previously immobile joint often gives valuable indications as to the nature and activity or otherwise of any infection, if opsonic indices before and after movement be taken.

The fringe only of the question of bacterial diagnosis is touched in the above remarks. The elucidation of any particular case must be left to the clinical observation of the practitioner, aided by such bacteriological technique as he may have at his command. Obscure infections must perforce be left to the bacteriologist and preferably one conversant with the technique of opsonic estimations. Such a question, for instance, as the diagnosis between tubercle and gonococcus may in some obscure cases baffle even an experienced bacteriologist, if he be not also an opsonist.

2. We now come to the consideration of the second subheading—viz., *the estimation of the amount constituting a correct dose and the period that should elapse before re-inoculation.* While on the whole general principles only will be enunciated a few examples will be quoted, and for the sake of simplicity the cases to be considered will be divided into two main classes—viz.: (*a*) Those cases in which the exhibition of a correct dose of an appropriate vaccine will be followed by recognisable and obvious clinical signs without any delay. An example of this class of case is afforded by a furuncle and, indeed, staphylococcal lesions generally. (*b*) Those cases in which a dose of vaccine, be it ever so appropriate, is not followed immediately by recognisable and obvious clinical signs or, it may be, any sign whatever. An example of this class of case is often afforded by a tuberculous lymphatic gland in which even objective symptoms may often be absent even when the dosage is appropriate.

Now it follows that the treatment of these two classes of case must be approached from a totally different standpoint. In the first class, where obvious clinical signs may be expected to follow a dose of vaccine, it is possible to determine within a few days whether our dose has been appropriate or otherwise. Taking for example an incipient furuncle, we will follow out a typical case. A patient with a history of recurrent furunculosis presents himself with a commencing boil and with a view to aborting it one gives him 50 million staphylococci and gives directions that he attend again in four days. On his second attendance one of three indications may be present: he may be better, he may be *in statu quo ante*, or he may be worse. In case the furuncle was seen early enough he is likely to be better or *in statu quo*. If he be better one has evidence that the dose of vaccine was large enough to cause an elaboration of a sufficiency of protective substance to go towards an abortion of the lesion; a similar or slightly larger dose of vaccine would be indicated. Again, if there has been little or no change the indications are that though a rise in protective substances may have occurred in the circulating blood, it is either not high enough or the blood, though maybe rich in protective substances, is not having free access to the congested area comprised by the boil. A larger dose of vaccine is indicated and some measure designed to determine the blood to the part. Such a measure, for instance, is a series of fomentations. It is likely that these measures will result in the absorption of the congested fluids and a return to the normal condition on the part of the area of the boil. There will in that case be no further evidence immediately observable as to the accuracy of any dose, but to insure a more or less permanent immunity gradually increasing doses are indicated until a maximum of 400 or 500 millions be reached, and the doses may be given at first weekly and later at increasing intervals. On the other hand, should a furuncle be under consideration that is clearly about to suppurate, a larger dose, say 500 millions, may be immediately given. The resistance will be depressed temporarily and the boil will quickly ripen and discharge with or without incision as may seem best. A week after the first inoculation a small dose of 100 millions should be administered and doses rising by 50 millions or 100 millions a time should be given at first weekly and later at increasing periods until a maximum of 400 or 500 millions be reached.

Another example of a lesion that gives early evidence as to the appropriateness of the dose of vaccine is afforded by a case of suppurating acne. Here an appropriate dose is followed by a temporary exacerbation of the signs lasting for 24 hours, after which amelioration occurs. If the dose be too small an immediate amelioration is observed; such an amelioration, however, is but short-lived; should, on the other hand, the dose be excessive and a more or less profound negative phase be produced, the lesions get worse for several days and only slowly get back to the condition they were in at the period of inoculation. In some cases of acne, especially in females, large doses of staphylococci are ill borne at first, and it may be some months before a dose of 400 millions will be borne without a marked negative phase ensuing.

Many cases of chronic eczema are associated with a low resistance to staphylococcus together with an abnormal fluidity of the blood. Small doses, gradually increased, of staphylococci combined with the internal administration of lime, preferably calcium lactate, may be given, such procedure in most cases producing an immediate and marked effect. A case came under observation with a history of nearly 40 years' duration. Half a dozen doses of 250 million staphylococci at fortnightly intervals, together with the administration of half-drachm doses of calcium lactate every other day for three doses, with a weekly rest between each series of three doses, cleared up the case in three months. A slight relapse six months after was cleared up with two more doses of staphylococci and some more calcium lactate, and for 18 months there has been no recurrence.

The examples quoted above are of typical cases, but occasionally cases are met with in which the dose has to be extremely small, and where any dose is followed by a negative phase lasting more than a day or 36 hours, it may be concluded that the dose was too large, and a smaller one must be given on the next occasion. A case of furunculosis of some years' standing came under treatment, and it not being at first realised that the patient was peculiarly intolerant of the ordinary doses, the dose was rapidly raised, and it was not until on two separate occasions that serious negative phases, followed by crops of furuncles, were caused by doses of 250 millions that it became obvious that an intolerance existed. A complete cure followed, when a series of doses of 50 million staphylococci were given, a cure that

has lasted without relapse for upwards of nine months and bids fair to be permanent.

Some cases of tuberculous infection will provide a certain amount of objective and possibly subjective signs by means of which guidance is afforded in dosage. Thus a tuberculous lymphatic gland may be rendered slightly tender to the touch, or even slightly painful by a certain dose. If such pain and tenderness last less than 24 hours it may be concluded that the dose was appropriate. Similarly a tuberculous joint infection may by increased pain and tenderness, with or without exercise, afford evidence as to the appropriateness of the previous dose.

In the case of streptococcus apart from acute general infections, the majority of the lesions to be treated will be local cellulitis, lymphangitis, and erysipelas, and secondary infections of tuberculous sinuses and lupus vulgaris. The local primary infections have to be approached with caution, and small doses only can be given. The clinical results are, however, so rapid as to afford very material evidence as to the appropriateness or otherwise of the antecedent inoculations. In the secondary streptococcal infections, notably those connected with tuberculous processes, the condition is as a rule, very chronic and sluggish. Larger doses of vaccine are borne without much negative phase, and indeed a slight negative phase may be not contra-indicated, as it may produce a flushing of the lesion with blood and increased exudation of lymph. The progress in these cases is, however, slow, and treatment may have to extend over several months. The secondary infection of lupus with streptococcus often obscures the clinical picture, and care must be exercised that a streptococcal infection be not mistaken for an exacerbation of the tuberculous process. Again, in gonococcal lesions, clinical signs afford valuable guidance. At St. Mary's Hospital the majority of our cases have been arthritic and in these an excessive dose is indicated by increased pain and stiffness with possibly a general malaise.

Some cases of urethritis have been treated with varying results. An autogenous vaccine, that is, one prepared from the patient's own organism, sometimes gives very good results. The negative phase is here indicated by an increase in the gleet, and if this lasts but one day a good result may be expected from the antecedent dose. With regard to gonococcus a marked difference occurs in the case of different vaccines. Thus a vaccine which we have been using for some months at St. Mary's Hospital gives good results in doses of from 2½ to 10 millions, other vaccines may require as a dose 40, 50, or possibly more millions. A recently isolated organism from a gleet gave no appreciable negative phase with an initial dose of 20 millions, and, indeed, only a slight fall towards normal was indicated opsonically, the index having been previously raised by the exhibition of a small dose of stock vaccine. By the fifth day, however, the resistance was nearly doubled and no organisms were found in the discharge which had previously abounded with gonococci. Examples might be multiplied indefinitely but those given above will suffice to indicate the lines to be proceeded upon in those cases in which clinical signs afford evidence as to the appropriateness or otherwise of each individual dose of vaccine.

The essential points in this class of case may be summarised thus. A dose of vaccine may be considered as appropriate when any negative phase, as indicated by objective or subjective signs, is only temporary and is followed by a longer or shorter period of improvement. Up to a certain point the period of improvement is proportional to the duration of the negative phase, but a point is soon reached when no improvement beyond the pre-existing condition is obtained. Beyond this point then a dose may be considered to be excessive. Conversely, if a short period of improvement with no signs of an intervening negative phase occur the succeeding dose of vaccine may be cautiously increased. As regards staphylococci the only exception to the above broadly stated rule would appear to be infective endocarditis and septicæmia, which are occasionally caused by staphylococcus. In such cases it would hardly be proposed that opsonic indices should be dispensed with, but were these latter out of the question it is obvious that extremely small doses should be given, though it might be advisable to repeat them with more than usual frequency, even to daily doses. Practically the only guide in such cases beyond the conditions of any local lesion that might be present would be the temperature. This, however, has been in some cases very valuable, indicating fairly accurately the state of resistance of the blood. Roughly, the temperature rises with a lowering of opsonic index, and *vice versâ*.

We now come to the consideration of the second class of case—namely, that class in which no objective signs immediately follow the exhibition of an appropriate dose of suitable vaccine. As an example of this class of case a tuberculous lymphatic gland was instanced. While it is true that in some cases a suitable dose of vaccine may be followed by slightly increased tenderness or even pain at the lesion, it is certain also that many, if not the majority, of these cases do not afford this evidence. Examples of negative phases that have been prolonged over several days as indicated by the opsonic index might be given in which no evidence as to increased tenderness or pain could be elicited. Again, in cases where two or more organisms are in question, the symptoms due to each several variety of microbe may not be obvious. In such it may be difficult to determine the value of any individual dose; it should be noted, however, that cases involving more than one organism are on the whole rare.

A tuberculous lymphatic gland may be taken as the most frequent lesion to be treated, in which clinical signs afford but little guidance. From week to week no great difference may be observable, and a long period may elapse even when resolution, as the result of appropriate doses of tuberculin, is occurring before the improvement is obvious, a period at least long enough to allow of several doses of tuberculin to be given. Hence it follows that there is no evidence as to which of several possibly varying doses of tuberculin given has been the correct one.

Not having the knowledge gained by constant estimations of the opsonic index recourse must be had to previous experience of similar cases. Before considering the application of this experience to particular cases it is advisable to differentiate between strictly local and more generalised cases of tuberculous infection. A much larger dose may be given in a strictly local case than in a more generalised case. Thus in the case of a robust adult presenting himself with a tuberculous lymphatic gland of the neck it would be good practice to give 1-15000th to 1-10000th of a milligramme of T.R. as an initial dose. If however, there were any involvement of the lung 1-30000th might be quite large enough a dose. The consideration of such lesions as pulmonary tuberculosis and tuberculous peritonitis must be superficial, however; suffice it to say that any doses larger than 1-30000th to 1-20000th must be given with extreme caution. A negative phase of even a few hours' duration may give opportunity for disastrous activity of the tubercle bacilli in such, cases and with no evidence of the existence or otherwise of autoinoculation a dose which might be suitable one day might well be excessive the following day.

To return to such localised infections as tuberculous glands without any constitutional disturbance. It has been stated that in an adult an appropriate initial dose would be from 1-15000th to 1-10000th milligramme. Such a dose may be administered not more frequently than once every 10 days and may be raised gradually every third dose until 1-5000th to 1-4000th milligramme be reached. Usually it is unnecessary to proceed any higher and 1-4000th milligramme may be given for months with good effect. It is not suggested that every case can, however, stand such doses, but the exceptions will be few. Cases of lupus stand tuberculin well as a rule. Rarely have we occasion to give a dose as large as 1-2000th milligramme. It must be understood, however, that in the absence of the check afforded by opsonic indices any dose greater than 1-4000th milligramme of T.R. is dangerous, at least in the first six months of treatment. Cases of genito-urinary tuberculosis will not stand large doses of tuberculin as a rule, and 1-5000th should be regarded as a maximum. In children below the age of ten years the doses are smaller, though proportionately children take tuberculin well. A typical chart of the opsonic indices and doses of tuberculin is appended as an example (Fig. 2). The case was one treated in the ordinary routine of practice and the indices were not worked out with a view to the formation of a curve chart.

Note with regard to curve.—The dotted lines have been inserted to indicate the probable diagrammatic course of the resistance. It is to be noted that when any particular dose was ceasing to be the correct one the response was very rapid and short-lived.

From this it will be seen how small a dose was given in the first instance and how gradually it was increased. That from a low average resistance a high average resistance was attained and maintained. That the average period above the normal line was much greater after the course of inoculations was started than the average period below the normal line.

This particular case is instanced because a generous number of opsonic indices was estimated and it affords a better example of chart than when only two estimations between each inoculation are undertaken, which latter number is usual in an average straightforward case. The indications in such a case being to estimate the opsonic index 24 hours after inoculation to reveal a possibly excessive negative phase and on the seventh day or thereabouts to reveal the persistence or otherwise of the positive phase. If a high state of resistance be revealed inoculation is, of course, delayed for a few days.

FIG. 2.

An opsonic chart showing the responses to increasing doses of tuberculin.

To summarise the treatment of cases in which no immediate indication as to the appropriate dose is afforded by clinical signs, such cases being generally tuberculous, it may be stated thus. In generalised tubercle, as phthisis and tuberculous peritonitis, larger doses than 1-30000th milligramme are to be given with the greatest caution, and in advanced cases such a dose even may be excessive. In strictly localised infections in adults the doses may range from 1-15000th to 1-4000th milligramme. In children with similar infections the doses may range from 1-25000th to 1-6000th, according to age and physique.

The indications as to dosage have designedly been slightly more dogmatic in the class of cases in which clinical evidence as to the appropriateness or otherwise of dosage is scanty or non-existent. Any hurry to increase the dose is deprecated, it being better to give several possibly non-maximal doses than one large enough to produce a severe negative phase with a consequent set-back and the undoing of the good that may have pertained to many previous doses. The generalisation of the infection as opposed to strict localisation is the especial point to bear in mind. In the former small doses are to be insisted upon, for reasons given above.

In the preventive inoculation of typhoid fever previous experience can alone be relied on. Happily, this experience is extensive and the doses can be indicated with exactitude. 1000 million typhoid bacilli are administered and the patient is advised to rest, not necessarily in bed, for the rest of the day. A slight and varying amount of malaise, headache, and possibly joint pains will occur, but they usually pass off by the next day. Not less than ten days subsequent to the initial injection a dose of 2000 millions is given, and a similar sequence of symptoms may follow but is usually less marked than after the primary inoculation.

It is to be borne in mind that a high resistance in the circulating blood may not necessarily react in the direction of a cure. Unless the protective substances have free access to the area of infection the infective microbes have a highly beneficial nidus in which to multiply. Thus, the walls of a long-standing sinus may have a very poor blood-supply by reason of pent-up discharge, due to obstruction to outflow or coagulation. In such a case the sinus may be flushed out with a hypertonic salt and citrate solution consisting of 4 per cent. of sodium chloride and 1 per cent. of sodium citrate in sterilised water. The hypertonicity of the solution promotes increased osmosis through the walls of the sinus and a more copious flow of lymph results; moreover, the citrate prevents coagulation and the increased flow of lymph through the sinus walls finds its way to the surface uncoagulated. The contents of a cavity, such as the peritoneal fluid in tuberculous peritonitis, the exudate in tuberculous pleurisy, or the contents of an abscess may be low in protective substances while the circulating blood contains an excess. Drainage of such a cavity is followed by the introduction of fluids rich in protective substances derived from the blood and the cavity, formerly a suitable breeding place for the infecting microbe, now becomes a highly unsuitable breeding place by reason of the increase in protective substances.

To meet the conditions as to dosage indicated in the foregoing remarks we prepare at St. Mary's various concentrations of vaccine. The different concentrations are so arranged that by quite simple calculations doses from the lowest to the highest figure indicated above may be given. The following is a list of vaccines prepared and issued:—

Tubercle vaccine (T.R.).—Prepared from tubercle bacillary emulsion; in two strengths—viz., 1-2000th and 1-5000th milligramme of dried comminuted tubercle bacilli per cubic centimetre.

Staphylococcus vaccine.—Prepared from recently isolated virulent cultures of staphylococcus aureus and staphylococcus citreus; in three concentrations—viz., 100 millions, 200 millions, and 500 millions of cocci per cubic centimetre.

Streptococcus vaccine.—Prepared from recently isolated cultures of streptococcus obtained from cases of erysipelas; in three concentrations—viz., 5 millions, 10 millions, and 50 millions per cubic centimetre.

Gonococcus vaccine.—Prepared from cultures of proved immunising power; in two concentrations—viz., 5 millions and 10 millions of cocci per cubic centimetre.

Typhoid vaccine.—Prepared from a culture that has been frequently tested as to its immunising power; in two concentrations—viz., 1000 millions and 2000 millions of bacilli per cubic centimetre.

There is a probability that a vaccine of micrococcus neoformans will shortly be issued, as evidence is accruing of the beneficial results as regards lessening of pain and retardation of growth and secondary deposits in some kinds of cancer. It will probably be issued in one concentration—viz., 50 millions per cubic centimetre. 15 millions may be regarded as an appropriate initial dose and 25 millions as an average dose.

The T.R. is prepared from Koch's bacillary emulsion obtained from Meister Lucius and Brüning. It is to be noted that the dilutions are made and standardised on the assumption that one cubic centimetre of the product as issued by Meister Lucius and Brüning contains two, and not ten, milligrammes of dried comminuted tubercle bacilli. The stock staphylococcal vaccine, as issued to the profession, is used at St. Mary's for practically all staphylococcal lesions. Very rarely is it necessary to make a special autogenous vaccine. The stock streptococcal vaccine is used initially in acute cases. As soon as the infecting streptococcus is isolated a special vaccine is almost invariably prepared, these being far more specific. Rarely is it possible to prepare special gonococcal vaccines, so the stock vaccine has usually to be relied on.

Practically all other lesions, more especially those due to bacillus coli communis, are treated with specially prepared autogenous vaccines, and with regard to the latter there does not appear to be the slightest likelihood of a stock vaccine proving of any use in more than a small percentage of infections due to the colon bacillus.

VACCINES IN GENERAL PRACTICE.

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THE following cases having resisted the older forms of treatment it was decided to try the effect of vaccine therapy, and in these notes we will give a brief history of the cases, the *modus operandi* employed, and the results obtained.

CASE 1.—A man, aged 35 years, with a tuberculous history, consulted us in September, 1907, regarding a large swelling of two months' duration, on the left side of the neck, which extended from the angle of the jaw almost to the manubrium sterni. The case was one of advanced tuberculosis of the cervical glands which were evidently in a state of caseation and liquefaction. A few days later an incision was made into the dependent part of the swelling and the fluid contents were evacuated. The swelling subsided considerably and during the following three weeks the disease seemed to be held in abeyance. The improvement, however, was only temporary and the swelling advancing downwards another incision became necessary. In the course of another month, owing to the disease having spread over the manubrium, it was found expedient to make a third incision. The wounds were throughout treated antiseptically and all precautions were taken against the possible occurrence of mixed infection. Absolute rest in bed was enjoined, the patient's diet was regulated, and the best hygienic measures possible were adopted. This proved of little avail. The wounds remained open, sinuses discharging tuberculous débris. Indeed, an extension along the deep fascia into the mediastinum was feared. The affected part, after remaining unchanged for about three months, was subjected to the x rays. Irradiation was given on three separate occasions at intervals of one week, the dose on each occasion being 15 minutes of a soft tube with 0·35 milliampères passing and the anticathode 12 inches from the diseased tissue. After each irradiation a thin friable cicatrix formed over the wounds, but it invariably broke down again after a few days. The patient had been under our care for seven months and we now decided on a vaccine treatment.

On May 11th, 1908, an estimation of the patient's opsonic index for tubercle bacillus was made, and the index was found to be 0·7. On the same day 1-5000 cubic centimetre of T.R. was injected into the infrascapular region. This

was followed on the 12th by a slight inflammatory reaction in the neck, and the temperature, which had previously been normal, rose a degree, otherwise there was no constitutional disturbance. On the 13th the inflammatory signs passed off and the temperature fell to normal. On the 15th the wounds were covered by a thin delicate skin. On the 17th this skin was shed and the wounds were once more open. On the 20th another injection of 1-5000 cubic centimetre of T.R. was given, the opsonic index being again 0·7. This injection caused, 12 hours later, inflammation in the wounds with distinct pain, which lasted for 24 hours. In four days the inflammation had subsided.

On June 1st a bluish-white line of epithelium began to appear round the wounds. On the 3rd 1-5000 cubic centimetre of T.R. was again injected and the same clinical phenomena followed as on the previous occasions. On the 10th the condition was as follows: The upper wound was closed by thin, young, healthy cicatrix; the second wound was partly closed and showing healthy margins; and the third or lowermost wound was still open but was surrounded by healthy edge and floored with pink healthy granulation tissue. On the 15th 1-2500 centimetre of T. R. was injected, the opsonic index being at this date 0·89 (practically normal). On the 17th the two lower wounds were almost closed and three days later all were completely covered and the patient was now allowed to go out in warm weather. On the 25th 1-2500 cubic centimetre of T.R. was injected, the patient remaining in bed on the two following days. This procedure was followed after each injection till the termination of the treatment.

On July 2nd 1-2500 cubic centimetre of T.R. was injected, the opsonic index being now 0·98. The patient was feeling in splendid health. The wounds had remained quite closed and the cicatrices were beginning to contract. On the 13th 1-5000 cubic centimetre of T.R. was injected. The scars were white and anæmic in places. On the 24th 1-5000 cubic centimetre of T.R. was injected. The scars looked strong, tough, and white. An area about one-eighth of an inch in diameter in the centre of the lowermost scar had broken down. On the 29th this breach was diminished to half its previous size.

On August 19th 1-25000 cubic centimetre of T.R. was injected. On this date only an area of the size of a pin's head remained bare. On the 25th the wounds were entirely closed and the cicatrices appeared fine, white, and strong. There was wonderfully little marking. The patient has remained well ever since and started work on Sept. 3rd.

CASE 2.—A man, aged 26 years, came on May 20th, 1908, complaining of an inflamed chin of a week's duration which proved to be a case of folliculitis barbæ. The infection involved the whole of the hairy part of the face and extended down the front of the neck. The chin was greatly swollen with subcutaneous abscesses and was the seat of much tension and pain. In a smear taken from one of the pustules the dominant micro-organism seemed to be the staphylococcus pyogenes aureus. There were also present a few streptococci and other pyogenic bacteria. The hair-roots were examined, but no trichophyton spores could be detected. The diseased parts were treated by epilation and by the application of boric acid and starch poultices, followed by antiseptic lotions and ointments for six weeks, but there was little or no improvement. Some of the pus was now plated, incubated, the right colony selected, and by a succession of sub-cultures a pure emulsion of staphylococci was obtained. This we attempted to sterilise by exposing it for one hour to a temperature of 68° C., or 2° above that which is sometimes recommended, but a loopful incubated for 12 hours on agar showed growth. We therefore decided upon sterilising the emulsion at 100° C. for 40 minutes, the measured doses being again steamed for 20 minutes in the ampoules immediately before sealing. We argued that even if one loopful or more should prove sterile on incubation this was no proper guarantee that the rest of the emulsion was free from living bacteria, whereas one hour at 100° C. practically eliminated all risk. Some consider that this temperature materially alters the toxins, so making the vaccine less efficient, but the favourable results obtained in this case, with a possibly modified toxin, would make us hesitate to take any risks with bacteria which had only been subjected to the lower temperature.

On July 4th a dose of vaccine containing 45,000,000 staphylococci was injected. The opsonic index for this bacterium was then 1·10. Wright has recommended 500,000,000 as a suitable dose, but other observers have obtained good results from smaller numbers. The patient was kept in bed for two days after the injection and this course was followed after each subsequent inoculation. All local antiseptic treatment was stopped. On the 5th there was a severe inflammatory reaction, with pain, swelling, and redness at the site of the disease. On the 6th the reaction passed off and a day later some of the pustules began to disappear. No new pustules made their appearance on the chin, but a crop came out on the right flank. On the 8th 90,000,000 staphylococci were injected. Local reaction followed on the 9th and did not subside until the 11th. Succeeding this there was a period of improvement, many pustules disappearing, and a crop again occurred on the right flank, disappearing in the course of four days. On the 15th the opsonic index was 0·9 and an injection of 125,000,000 was followed by a sharp reaction and the appearance of a few pustules on the flank. On the 17th the reaction passed off, the pustules on the flank disappeared, and a period of improvement set in which continued steadily until the 24th, when the whole of the inflammatory process had subsided except at the point of the chin, where an area of about one square inch still exuded pus. On the 24th 200,000,000 staphylococci were injected and after the local reaction had passed off there was further improvement. All pain and tension had completely disappeared. On the 27th the process had become limited to two small pustules on the chin and a few scabs.

On August 5th 300,000,000 staphylococci were injected. No pustules were present on the chin on the 10th and the hair was growing luxuriantly. For the first time during the course of treatment no pustules on the flank followed this fourth and last injection. The patient has remained quite well up to the present time.

CASE 3.—A boy, aged ten years, was brought to us in the beginning of June, 1907, complaining of pain, stiffness, and swelling over the first metatarsal bone and proximal phalanx of the great toe of four months' duration. The case was one of tuberculous disease of the metatarso-phalangeal joint. Calmette's ophthalmic reaction was positive. The boy was put to bed, the foot was immobilised in a splint, and cod-liver oil and a nutritious diet were prescribed. The general condition was asthenic. In the course of a month the swelling had increased and showed signs of liquefaction. The question of an excision was considered, but it was decided to incise and evacuate. This was done at the beginning of August. Shortly after this the skin broke at two other place, and there were now three sinuses discharging. Treatment by Bier's method was initiated, the congestion being kept up for two hours twice daily. This had a distinctly salutary effect. The swelling began gradually to subside and the discharge lessened. One sinus closed completely, but the other two still remained open, discharging a little serum every day. During February, 1908, a second sinus closed, but opened again in a few days. This was repeated on two or three occasions during the next three months; the third wound never closed. The boy's general health had improved.

On June 13th, 1908, 1-10000 cubic centimetre of T.R. was injected and the patient was kept in bed the following day. There were a well-marked local reaction with congestion and increased discharge from the sinuses. On the 15th the reaction had subsided and during the following seven days there were a continued diminution of the swelling and a lessening of the discharge. On July 2nd another 1-10000 cubic centimetre of T.R. was injected. After the reaction had passed off further improvement occurred. One of the sinuses closed, while the other remained open, discharging a little serum every second or third day. At the beginning of August the remaining sinus closed, but opened up again about the middle of the month. On the 19th 1-10000 cubic centimetre of T.R. was injected. After the reaction had passed off the remaining sinus closed and remained so. On Sept. 1st the scars were white, soft, pliable, and depressed. Comparatively little thickening was present at the site of the lesion. The joint remained stiff. On this day an injection of 1-10000 cubic centimetre of T.R. was followed by a very slight reaction. The last closed sinus opened on the 2nd and emitted a drop or two of blood-stained serum. On the 3rd the dressing was absolutely dry, no discharge being present nor has there been any reappearance of the discharge since that date.

CASE 4.—A man, aged 70 years, complained in December, 1907, of cough and expectoration, loss of appetite, weakness, and shortness of breath, all of one month's duration. He volunteered the information that he sweated at night. There was a moderate nocturnal elevation of temperature. On percussion the note over the apex of the right lung was tympanitic. On auscultation there were clicking râles and amphoric breathing at the same spot. There was also a distinct history of tuberculous disease at this apex two years previously. At that time tubercle bacilli were found in the sputum. The treatment adopted was on the recognised hygienic, dietetic, and therapeutic lines, and under this *régime* the patient's condition slightly improved.

At the end of April, 1908, the sputum was examined and was found to be teeming with encapsulated pneumococci mixed with a considerable number of Friedländer's pneumo-bacilli, but repeated examination by the more elaborate methods failed to detect any bacillus of tubercle. It was therefore concluded that the focus of tubercle was locked up and that we had to deal with an invasion of the right apex by pneumococci, and it seemed a rational treatment to attack these organisms with a suitable vaccine. This was therefore prepared from the patient's own strain of pneumococci. We considered that the clearing up of the pneumococcic infection would probably be a good step towards the resolution of any tuberculous process that might be going forward.

On May 29th the patient received the first dose of vaccine. This dose contained 15,000,000 of mixed pneumococci and pneumo-bacilli, the former being largely in excess of the latter. Next day there was a very slight reaction which was followed by no discernible improvement in the patient's condition.

On June 6th 15,000,000 were again injected, the patient's opsonic index being then 1·6 for pneumococci. There was a slight reaction, a feeling of malaise and increased cough and expectoration, followed in the course of the day by a sense of well-being. The temperature now remained normal and the night-sweats were less troublesome. On the 10th he was allowed out of bed for an hour. On the 17th 30,000,000 were injected. After the reaction had passed off there was further improvement. Cough and expectoration were diminished, the patient felt stronger, and was able to sit up for four hours. The appetite was much better. An examination of the sputum showed a remarkable diminution in the pneumococci and no tubercle bacilli were to be found. An opsonic estimation made on this day showed an index of 1·0 for pneumococci and 1·3 for pneumo-bacilli. On the 30th he was allowed out on warm days.

On July 2nd another injection of 30,000,000 was given. A few days after this the patient was able to go for an hour's walk. The improvement was progressive and on the 27th he was able to do a little manual work. All the signs of a cavity were, however, still present at the right apex. On the 28th 10,000,000 were injected, and after the reaction had passed off the patient's condition continued to improve. He was soon well enough to work. Since early in August he has been engaged in a regular, though light, occupation, and says that he feels better than he has done for nearly a year. There are still cough and expectoration, but the cough is slight and the expectoration very scanty. A few râles are to be heard at the right apex, but on the whole the improvement is very great indeed.

Conclusions.—The results in the foregoing cases have so far been most satisfactory and we venture to attribute this to the action of the vaccines. In those cases treated with tuberculin the following points are of note:—

1. The scars resulting were soft, pliable, and the disfigurement slight.

2. Recovery under the treatment seemed rapid, and this implied saving of suffering and expense to the patient and anxiety to the medical attendants.

3. The absence of severe surgical measures minimised the risk of a general tuberculous infection and obviated that slight risk which always attends general anæsthesia.

4. Although opsonic estimations were only made occasionally during the treatment, they suggested that the index was being steadily raised, and from this it is probable that for some time, at least, the patients will be less susceptible to attacks by the same bacterium. Surgical measures alone may achieve this indirectly, inasmuch as they rid the body of the focus of disease, but it is questionable if they are capable of raising the standard of defence to the same high level as that induced by vaccine therapy.

It may perhaps be right to conclude by saying that much expense and valuable time were saved to the patients and to ourselves by the fact that the microscopical work, the electrical treatment, the preparation of vaccines, and the opsonic estimations were all conducted in our own laboratories.

Ballachulish, Argyllshire.

THE SANITATION OF MINES.[1]

BY FRANK SHUFFLEBOTHAM, M.A., M.B., B.C. CANTAB.

THE question of the sanitation of mines has been brought prominently to our notice of late years through the outbreak of ankylostomiasis in Westphalia, Belgium, and other European countries, as well as among the tin miners of Cornwall. In each district the disease has affected large numbers of workers, in some cases to such an extent as to be a great menace to the industry. The absence of sanitary arrangements underground has been the principal cause of so many men being struck down by this disease, and it has been due mainly to the institution of elaborate sanitary arrangements that the disease has been eradicated, and even then in each epidemic it has been a matter of many months, and in some districts of several years, before the disease disappeared.

Proper sanitary arrangements are desirable in mines on general hygienic grounds, but they are necessary on account of the dangers which may arise through their absence. In the first place I wish to show how ankylostomiasis can be spread among miners through the want of proper sanitation underground, and I will describe briefly the nature of the disease, so that this will be all the more easily understood.

Nature of Ankylostomiasis.

Ankylostomiasis is a disease caused by the presence of a small worm known as the ankylostoma duodenale in the upper part of the small intestine. The worm attaches itself to the mucous membrane of the bowel by means of hooks which are situated round its mouth. It does not reproduce itself within the intestine but the female lays an enormous number of microscopically small oval eggs which pass away in the fæces. The eggs hatch out into larvæ under favourable conditions of temperature and moisture and in the presence of oxygen and absence of daylight. The eggs will not hatch out in the intestine owing to the lack of free oxygen. The larvæ continue to grow and after a short time they develop a capsule. It is in this state that they enter the human body. Miners often relieve themselves underground and if they are infected with ankylostoma then the motions would be a source of danger. The hands of their fellow-workers might become contaminated with infected fæcal matter and when they take their food at "snapping-time" they would swallow some of the encapsuled larvæ which in the intestine develop into full-grown worms. The worm may live in the human intestine for several years. The disease is endemic in many tropical and subtropical countries but when found in temperate climates it is practically confined to miners and workers in tunnels.

Symptoms and diagnosis of the disease.—The symptoms are: (1) anæmia with its usual accompaniments, pallor, shortness of breath on exertion, palpitation, giddiness, and fainting; (2) gastro-intestinal disturbances; and (3) in the outbreak in Cornwall skin symptoms were found. The positive diagnosis can only be made when the eggs are found in the stools. For the methods of detecting the eggs I would refer to the Home Office Memorandum of Feb. 16th, 1904, and to papers by Dr. A. E. Boycott and Dr. J. S. Haldane in the *Journal of Hygiene*, January, 1903, and January, 1904.

It must be remembered that only a certain percentage of those infected with ankylostoma show symptoms of the disease. This is of great importance from the fact that they are just as great a menace as those whose symptoms are marked. The examination of the blood, however, will show

[1] A paper read before the Industrial Hygiene Section of the Royal Institute of Public Health at the Buxton Congress on July 21st, 1908.

a condition known as eosinophilia in those who are infected, whether they show symptoms or not.

Method of infection of mine.—This is brought about by (1) the mine becoming infected by men who have brought disease home from countries where it is endemic (for example, soldiers from India, Egypt, or West Indies) or from European mines where the disease is found; and (2) lack of sanitary arrangements when such men work in mines.

Conditions favourable to the disease.—1. Temperature exceeding 68° F. Dr. Boycott and Dr. Haldane have hatched out fully developed larvæ at temperatures as low as 60°. The disease may claim greater attention in the future as all new workings will be very deep, 800 or 1000 yards or more. In these cases the temperature will be much higher than the minimum required. The temperature of a mine also depends upon ventilation, so that if there is any slackness in attention to this matter, even in what is regarded as a cold mine, we may find at times the temperature sufficiently high to favour the development of the larvæ. 2. Moisture is an essential factor for the development of the ova and the growth of the larvæ. In the deepest pits, which are regarded by mining engineers as dry, water may be found sometimes. If the watering of the roadways be made compulsory this condition will always be present in every mine so watered. 3. Lack of sanitary arrangements in mine.

Prevention.—1. By providing suitable sanitary arrangements. This point will be referred to in detail further on in this paper. 2. By forbidding miners to relieve themselves along the permanent roadways and in places where the fæcal matter may be trodden about. 3. By the miners taking the precaution to wrap up their food in paper when handling it and thus keep it free from contamination. 4. By the rigid exclusion of those men who are known to be infected. 5. By the medical examination of all men who apply for work at mines and who are known to have been in countries where the disease exists.

Relaxation of efforts to deal with this disease may be attended with grave dangers. The following points may be worthy of notice under this heading:—1. The miners may be infected without showing any symptoms. 2. No mine should be assumed to be free from ankylostomiasis unless a careful inspection has been made and negative results found. 3. An epidemic of ankylostomiasis does not break out in a few days like influenza. Infection may be present in the mine for a considerable period of time and an epidemic follows when there arise conditions which are more favourable to its development.

To give an idea of the extent to which this disease may spread, I would like to remind you that in 1903 in Westphalia, even after considerable improvements had been made in consequence of stringent regulations, out of 188,730 working miners no less than 17,161 were affected by this malady, which is equivalent to 9·09 per cent. In Belgium this subject engaged the attention of the International Congress of Miners and the International Hygienic Congress, both of which were held in Brussels in 1903, and it was stated that 10,000 miners around Liége were suffering from ankylostomiasis; this represents about 30 per cent. of the whole mining community in this district. Dr. Barbier has shown that in the vicinity of Liége 49 pits were infected out of 72 and 23 were immune or had only a single case of the disease. In Austria it was found at Brunnberg, a mining centre, that no less than 85 per cent. of the miners were infected in 1896. With the most strenuous precautions and the establishment of a hospital for the treatment of sufferers the percentage of patients declined to 47 per cent. in 1898, 26 per cent. in 1899, 23 per cent. in 1900, 12 per cent. in 1901, to 8 per cent. in 1902.

Typhoid Fever among Miners.

It has been observed for some years that colliers have been predisposed to contracting typhoid fever through the lack of sanitary arrangements in mines and through the infective exhalations being carried by air currents along the roadways and workings of the mines, and several Local Government Board reports have been issued from 1889 onwards dealing with this subject. But the most important report on this matter has been issued this year by Dr. R. Deane Sweeting, who deals with the prevalence of typhoid fever in the borough of Leigh. This town has a population of 43,000 people of whom 5000 are working colliers. For many years past typhoid fever has not been absent from the town.

The following table shows the number of notifications of, and of deaths from, typhoid fever since 1899:—

TABLE I.

Year.	Notification.	Deaths.	Year.	Notification.	Deaths.
1899	47	9	1904	35	12
1900	57	2	1905	37	11
1901	34	8	1906	49	14
1902	49	13	1907 (to Sept. 30th)	26	5
1903	46	12			

Table II. shows the number of cases of typhoid fever notified from 1902 to 1906 and also the number of colliers affected:—

TABLE II.

Year.	Total number of notifications.	Number of colliery employees notified.
1902	49	13
1903	46	17
1904	35	12
1905	37	11
1906	49	17
1902-1906	216	70
Average per year	43	14

Table III. shows that the incidence of typhoid fever on the collier population of Leigh is four times that on the non-collier population:—

TABLE III.

	Population.	Average yearly incidence of fever.	Rate per 1000.
Colliers	5,049	14	2·8
Non-colliers	38,267	29	0·7
Whole borough	43,316	43	1·0

Dr. Sweeting attributes this fourfold greater incidence among colliers as compared with the rest of the inhabitants as mainly due to the conditions of excrement disposal which obtain at the various collieries at which the men work. There are seven collieries within the borough of Leigh and at four of these there were no provisions made underground, excrement being voided anywhere and anyhow. At one colliery there were a dozen wooden boxes provided for 620 workers, but the conditions which prevailed at the remaining two collieries were distinctly better, improvements having been instituted since the outbreak of ankylostomiasis in Cornwall.

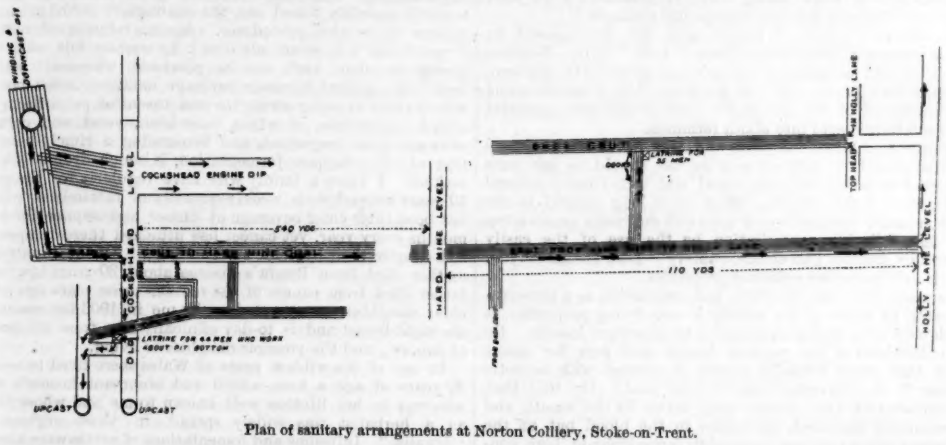
It is now common knowledge that a typhoid patient may remain an effective carrier of the disease for a long period of time and it would appear that the underground workings of a mine afford ideal conditions for the dissemination of the disease.

Present-day Requirements.

These considerations of ankylostomiasis and typhoid fever among miners, as well as the general hygienic aspect of the question, should emphasise the necessity for the sanitation of mines being put upon a satisfactory basis. In making a few suggestions upon the present-day requirements I shall follow the evidence which I had the honour of giving before the Royal Commission on Mines.

There should be proper conveniences at the pit bottom and at convenient points near the main roadways where large numbers of men work. I cannot do better than refer to the arrangements at the Norton Colliery near Stoke-upon-Trent, where Mr. Salt, the manager, has erected closets near the pit bottom and near one of the principal roadways of the mine where a considerable number of men work, and it is purposed to extend the accommodation to other parts of the mine. Each closet is situated in a brick structure provided with a wooden door, and it consists of a galvanised iron pan containing coal-dust placed underneath a wooden seat. The closet near the pit bottom is put in the intake roadway and the other one is placed between the separation doors in a cross cut connecting the main intake with the return crut and each closet is satisfactorily ventilated by an iron pipe placed over the pan and communicating with the return airway. The total cost of a closet, including brickwork, is within £5. The closets are kept in a clean condition by the men and the pans are emptied about twice a week, or oftener if necessary, by one of the horsekeepers, the pans being taken up to the surface and emptied on the waste heap, where they are

burnt. (It is far better to take the pans to the surface to be emptied rather than to empty them in the far parts of the mine.) Mr. Salt tells me that the closets are largely used not only by the men working at the pit bottom and along the roadways but also by miners working at distant parts of the mine who use them either before commencing work or when they are waiting at the pit bottom to return to the surface. Previous to the erection of these closets the men had to relieve themselves in cross-cuts and disused roadways, with the result that the ground in these places was contaminated with fæcal matter. Under the present conditions the men use the conveniences provided for them and from the conversations I had with them they very much appreciate this accommodation. The plan shows the position of these closets and the distribution of the men in the mine at those points. On the surface there are two closets and three urinals provided.



Plan of sanitary arrangements at Norton Colliery, Stoke-on-Trent.

Sanitary arrangements are not necessary for men employed at the working face because the face is continually moving and the men can retire into the goaf where no one can come in contact with the motions. The ventilating air is not contaminated under these conditions. An exception, however, must be made to this general statement. Where the dips are so steep that the men are obliged to reach the working face by ladders, *portable pails* should be provided because the goaf is always above the men, and if the men relieved themselves in the roadway at the top of the dip they would get their hands contaminated with fæcal matter in ascending and descending the ladders.

The evidence already given before the Royal Commission on Mines shows that in some districts there is an entire absence of sanitary arrangements underground. At some isolated collieries in Yorkshire, Lancashire, and North Staffordshire sanitary arrangements have been instituted, but in other districts no provision is apparently made in this direction. I do not believe that in either Scotland or Wales, where there are large mining communities, there is a single colliery possessing any sanitary conveniences underground.

It is said by some that were closets universally provided in mines the men would not avail themselves of these arrangements, but I do not think this is true. As far as my experience goes in North Staffordshire the men appreciate these sanitary improvements. I have never heard of a single case of a miner refusing to take advantage of them. As long as the closets are well looked after and the seats kept clean so long will the men use them. I have spoken to miners working in mines where no sanitary arrangements are made and they would gladly welcome the introduction of closets.

I believe it should be made compulsory for all mine-owners to make suitable sanitary provisions at each colliery, both underground and on the surface, on the lines which I have described exist at the Norton Colliery. The best way this could be brought about would be by the extension of the Special Rules made by the Secretary of State and applied to mines in Cornwall during the outbreak of ankylostomiasis in that district to the whole of the mines in the country. These rules require that:

> The owner, agent or manager shall cause a sufficient number of suitable sanitary conveniences to be provided above and below ground in suitable and convenient places for the use of the persons employed, and to be constantly kept in a cleanly and sanitary condition, and no person shall relieve his bowels below ground elsewhere than in those conveniences. [An exception would have to be recognised to this section of the rules in the case of those miners who work "at the face," and who are able to retire into the goaf.] No person shall soil or render unfit for use in any way any convenience or sanitary utensil or appliance provided for the use of the persons employed. Pump cisterns, sumps and water accumulations in the mines shall not be directly or indirectly used as sanitary conveniences. It shall be the duty of the owner, agent or manager to see that all plant, material and other things necessary to enable the above rules to be carried out are provided and maintained in working order, and to appoint sufficient competent officials to enforce the requirements of the rules, and for this purpose to assign to each his respective duties. It shall be the duty of the officials so appointed to see that the rules are observed by all persons employed in the mine and to carry out the duties assigned to them. It shall be the duty of all persons employed in the mine to comply with the requirements of the rules and with such instructions as may be given to them by the officials with a view to such requirements being carried out.

In conclusion, I consider that this subject is of sufficient importance to receive the attention of mine-owners, and that it should be dealt with by professors of mining in the universities, by county council lecturers in their classes, and that the men's leaders should not neglect to instruct the working miners to coöperate with their employers so as to make the sanitary conditions of mines more satisfactory in the future.

Newcastle-under-Lyme.

THE FORMIC ACID DERIVATIVES IN THE TREATMENT OF CANCER.

BY J. HOWELL EVANS, M.A., M.B., M.CH. OXON., F.R.C.S. ENG.,

HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND, 1907; ASSISTANT SURGEON TO THE PRINCE OF WALES'S GENERAL HOSPITAL, N.; ASSISTANT SURGEON TO THE CANCER HOSPITAL, S.W.

I WISH to record for the readers of THE LANCET the details of some work systematically carried out since October, 1906, in connexion with formic acid and its derivatives. As topical applications or internal medications I have employed the following preparations: 1. Formalin; formamint lozenges. 2. Formic acid; formates; glyceroformates. 3. Infusio A.F. (formula of the Cancer Hospital Pharmacopœia): an infusion of the common nettle either grown under glass or plucked from its beds, according to the season of the year, so that the fresh herb has been regularly used. 4. Nettle fomentations. 5. Douches, irrigations, and rectal injections of formaldehyde and nettle preparations. We may here briefly consider some of the derivatives of the lowest member of the paraffin or methane series.

Methaldehyde, synonymous with formaldehyde (formalin is a 40 per cent. solution of formaldehyde), has long been

known in dilute solution; it is said to occur in the chlorophyll cells of all plants and to form an unstable product in the unsolved synthetic process of conversion by the plant of the carbonic acid gas of the air into carbohydrates.

Formaldehyde is a powerful reducing agent and by its combination with oxygen forms formic acid, whereas by reduction it becomes converted into methyl alcohol. By evaporation formaldehyde is converted into a polymeric body, paraformaldehyde. Polymerisation is one of formaldehyde's most characteristic properties; when an aqueous solution is treated with a weak alkali there is produced a polymer formose. (What a field for therapeutic romance!)

Formates, or salts of formic acid, are decomposed by dilute mineral acids yielding formic acid. N.B.—Whether the dilute HCl secretion of the stomach converts the glycero-formates into formic acid I do not know, but I would assert that the alkali of the pancreatic juice would soon reconvert any such formic acid into alkali formates.

Formic acid blisters the skin and acts like a weak mineral acid, so that I do not see why its use should be any more exploited than the long-employed and well-known mineral acids, HCl, HNO_3, H_2SO_4, which have long yielded to the more accurate delineations of the knife and more penetrating but less diffusing cauterisation by the use of the easily adjustable thermo- and electro-cautery. Like formaldehyde, formic acid possesses reducing properties.

Formalin has long enjoyed a just reputation as a preservative and, by virtue of its antiseptic and drying properties, is much used as a topical application to ulcerative lesions. Do the enthusiasts of the vaunted formic acid cure for cancer think that when formalin comes in contact with necrotic tissues it is converted into formic acid? Or will they shortly advance that formic acid, taken by the mouth and subsequently absorbed, circulates in the blood but at the cancerous focus becomes reduced to formaldehyde, here, concentrated and nascent, to serve the dual purpose of a destroying demon to the cancer cell but of a guardian angel to the normal cells of the tissue. The potency of a drug introduced into the systemic circulation to destroy the cancer cell—a living cell—and yet leave unscathed the normal cell of the tissue infers a selective process with which I am not familiar.

Quinine does not limit its powers of primary retardation and final stagnation of the varying changes in the life-history of the "plasmodium malariæ" without affecting the cellular elements of the blood. Why, every student of medicine is taught to observe the phenomenon of negative chemiotaxis and the inhibition of amœboid movements as induced by the action of a solution of quinine upon the leucocyte!

The extensive use of iodides depends, first, on their diffusibility, but secondly upon the readiness with which the halogen salt of the lesion-producing toxin is formed, so that I believe, before many years, the therapeutic action of the halogen bodies will be accurately determined and equated chemically.

The following cases, proved to be carcinoma by microscopical investigation in corroboration of clinical deductions, have been treated by one or more of the preparations or applications referred to above:—

CASE 1.—Patient aged 53 years. Carcinoma cervicis uteri. Much pain. Owing to distaste for the infusion of nettle such was discontinued after six weeks. Formalin douches. No benefit obtained from this treatment. Progressive cachexia. Death.

CASE 2.—Patient aged 42 years. Carcinoma cervicis uteri. No pain. Marked cachexia. Infusio A.F. Formalin douches. No benefit. Death.

CASE 3.—Patient aged 47 years. Carcinoma linguæ. Constant sipping of infusion of fresh nettle for four months. Formamint tablets. No check to the progressive course of his malady obtained by such medicaments. Death.

CASE 4.—Patient aged 50 years. Carcinoma laryngis. Previously treated at a special hospital for diseases of the throat. Pain progressive, now intolerable. Insomnia. Infusio A.F. constantly imbibed for six weeks with neither relief from pain thereby nor diminution of the growth. Formamint tablets. Death.

CASE 5.—Patient aged 54 years. Advanced carcinoma cervicis uteri. Formic acid by the mouth. Formalin douches and fomentations of nettles regularly employed from May 29th to July 31st without any amelioration to the progressive fatal course of the disease.

CASE 6.—Patient aged 62 years. Cancer of floor of mouth. This man had been an in-patient at one of our large general hospitals under the care of an eminent surgeon. The patient stated that he felt better while in hospital receiving careful nursing and a generous diet, but that the size of the lump had gradually increased. For four months this patient drank "nettle-tea" regularly while the progress and severity of the lesion were in no way alleviated.

In each of the above cases the treatment was systematically conducted under favourable dietetic and hygienic conditions. In each case the progress was unchecked and the issue definite. Of course, the breath was less obnoxious when formamint tablets were sucked and the vaginal discharges were less offensive when formalin douches were employed.

The therapy of formic acid is no new and wondrous discovery which has come to emancipate us from the terrible disease cancer. The diuretic and irritating action of the urticaceæ have long been known; indeed, urtication is a term applied to flagellation with nettles which was a method of treatment once employed for paralysis. This crude method probably found out the malingerer with as much success as modern procedures. Again, infusion of nettles ("nettle-tea") is commonly drunk by country folk when the young succulent herb can be plucked; whereas "nettle-beer," an ancient summer beverage entailing some housewifery in its brewing owing to the essential proportions of added ingredients, of which buck-bean, yeast, and certain salts are most important, and demanding a timely perception of the adequate fermentation, is much drunk by hay-makers. I know a family who have regularly for the past 40 years brewed their weekly quantity of nettle-beer, which has been their chief beverage at dinner and supper for four months every year, yet cancer has attacked these temperate folk despite their hygienic surroundings. Of this family the mother died from Bright's disease about 20 years ago; the father died from cancer of the rectum three years ago; the elder daughter was operated on by me in 1903 for cancer of the right breast and is to-day clinically free from all traces of cancer; and the younger daughter is living.

In one of the wildest parts of Wales there lived to nearly 90 years of age a keen-witted and observant farmer's wife who was in her lifetime well known to me and whose fame as a herbalist was widely spread in those regions of "Gwalia." Infusions and fomentations of nettle were among her pharmaceutical armamentarium; these in particular she applied after a more energetic treatment to such cancerous conditions as rodent ulcer, epithelioma of the lip, tongue, and hand—which malignant papillary growths she termed "dafad wyllt," or wild wart. The more energetic treatment, dexterously carried out by her gentle hands, was the actual cautery—a kitchen poker, a large nail, or a knitting-needle heated to redness in the fire, before which the patient sat, was driven deeply into the lesion and repeatedly if deemed correct—to be followed by a sterilised dressing of molten lard and a burnt rag. Her cures were numerous and, needless for me to state, were due to the cautery and not to the subsequent nettle concoctions and applications.

If formic acid has these beneficial effects why is acetic acid, one of the same homologous series of organic compounds, held out by many medical men as a cause of an antecedent state productive of cancer of the stomach? Again, if this acid of the lowest of the methane or paraffin series is a cure, why have clinicians through many ages taught that the higher members of this paraffin series are a causative factor in sweeps' cancer?

I feel no hesitation in adding that no authentic case of carcinoma, as recognised clinically and confirmed by an expert microscopist, has as yet been expurged by ingestion of formic acid.

Berkeley-square, W.

A CASE OF RUPTURED UTERUS.

BY ALICE M. SORABJI, B.SC. BOMBAY, M.B., B.S. LOND.,
DOCTOR IN CHARGE, VICTORIA ZENANA HOSPITAL, DELHI, INDIA.

THE patient was an Englishwoman, aged 24 years, who came to me five weeks after parturition complaining of general lassitude and pain over the lower part of the abdomen, with exacerbations at intervals. She had come in from an out-station and was only brought to see me on her way home. On examination the abdomen was found to be very tender below the level of the umbilicus, and per vaginam the cervix was soft, the os admitted two fingers, and the sound went in five inches and abutted against a soft mass at the fundus. There was a good deal of discharge which had an unpleasant odour. The patient was induced to stay in the hospital and was prepared for curettage the next day.

At the operation there was naturally no need for dilatation and the blunt curette was inserted at once and some blood

clot and shreds of placenta were removed from the lower half of the uterus—the soft mass at the top not being dislodged. The curette was only in use a minute when it was noticed that a yellow fat-like substance came away in one scraping. As the flushing curette was not in working order my assistant passed me the ovum forceps to deal with what we considered the placenta attached to the fundus. It was gently withdrawn and to our extreme surprise was seen to be a coil of the large intestine! It was immediately replaced, and a long saline injection was given through the wound into the abdomen. The patient's pulse had become running and feeble; she was given strychnine and ergotinin hypodermically and the saline injection was continued until she recovered. A strip of gauze was put into the uterus, which was beginning to contract, and the vagina was lightly packed. The patient's condition was not at the moment such as to allow of an immediate laparotomy, so she was taken to the ward and there watched, being given hypodermic injections of strychnine and ergotinin. She was placed with her head lower than her feet for the first hour.

Dr. Agnes C. Scott, of St. Stephen's Hospital, was called in in consultation. The patient's pulse had improved and was full and strong. She was not vomiting unduly and seemed fairly comfortable, so it was decided to push the ergotinin and to place her in Fowler's position; this was done. She gradually improved and was kept on albumin water and white wine whey at first and then began taking milk. Her pain had disappeared and when she had been six days in hospital she felt well enough to want to go home. Meanwhile she was kept in Fowler's position except for a short time on the fifth and sixth days, when her bed was lowered and she was allowed to be raised on pillows. She was having no discharge and no pain; her temperature was normal and the pulse was good. On the night of the seventh day the night nurse noticed a discharge on the diaper. It was slightly yellow and had a faint odour of digestive fluid. Some pain was felt by the patient in the right iliac region; she was otherwise doing well. A laparotomy was decided on as the discharge continued and made us suspect a rent in the intestine. The patient's pulse on the eighth evening was not very satisfactory. On opening the abdomen it was found that the omentum was closely adherent all round the lower part, which was completely shut off. It was attached to the brim of the pelvis and, indeed, was so firmly held down that it was decided not to risk opening it. The abdomen was closed and the patient was put to bed. Her condition did not justify the extensive radical and plastic measures that were necessary. Her condition suddenly got worse two days after. The tenderness of which she had complained (before admission) in the right iliac region increased. She was unable to retain anything but albumin water; her pulse got very bad. On the twelfth day after admission she died.

It was discovered later that at her confinement she had an untrained Indian midwife who is one of a class that generally pull on the child and sometimes, to assist labour, *stand* on the fundus. The patient had been unable to recover her strength after the confinement and had had five attacks of extreme colic in four weeks. The pain was most severe in the right iliac fossa. She was doubled up with it and had vomiting and constipation. The pain lasted for from four to six days each time, being acute for about 36 hours.

No post-mortem examination was allowed but from what was seen and felt at the operation the case was one in which there had been a long transverse tear in the fundus (about two inches long at the date of operation). Lying on this tear and protruding into the uterus was a coil of intestine which the subsequent examination proved to have been shut off by the adherent peritoneum. The dislodging of this coil and the contractions of the uterus in which it was, perhaps, again caught may have produced the later symptoms which preceded death.

Delhi.

UNIVERSITY OF OXFORD.—Mr. H. C. Bazett, B.A., Wadham College, was the successful candidate in the recent examination for the Universities' scholarship at St. Thomas's Hospital. Mr. Bazett took a first class in physiology in the final schools last July.

DIFFUSE PAINFUL LIPOMA OF THE FOOT.

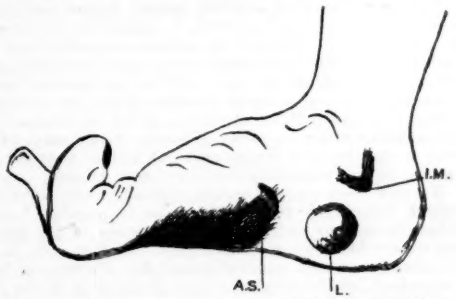
BY A. H. TUBBY, M.S. LOND.,
SURGEON TO WESTMINSTER HOSPITAL AND IN CHARGE OF THE ORTHOPÆDIC DEPARTMENT, ETC.

DURING the past ten years some examples of an affection which I believe to be hitherto undescribed have come under my notice. The trouble, although a slight one, yet causes considerable difficulty and pain in walking and from its position mistakes easily arise in diagnosis. I append notes of two cases.

CASE 1.—A hospital nurse, aged 25 years, was admitted to Westminster Hospital on May 24th, 1906. She had been nursing for nine months. Three months previously she first experienced aching pains in the soles and inside of the feet. The pain was worse on rising in the morning and for about an hour afterwards, but it continued to trouble her for the whole day. Almost instantaneous relief was obtained on lying down or resting the foot, but the pain came on again on walking. On examination, on looking at the feet on the inner side and just below the sustentacula tali, an oval swelling was visible on each foot. The growths encroached on the weight-bearing surface of the feet; in size they measured 1 inch by 1½ inches. Their characters were those of indolent growths, moderately well defined and without signs of inflammation over them. They were painful to the touch and particularly so to deep pressure. The feet were not flat in the ordinary sense of the word. The swellings were diagnosed as diffuse lipoma from an experience of similar cases. An operation was undertaken and when the swellings were incised they were found to be of a fatty nature. They were not encapsuled; but the globules of fat of which they were composed were considerably larger and lighter in colour than the surrounding normal fat, so that there was no difficulty in dissecting away the whole of the growths. It was noticeable that the tumours were highly vascular and bled considerably. The wounds were closed in the ordinary way and healed without difficulty.

Dr. R. G. Hebb, the physician-pathologist to the hospital, made a microscopical examination, and reported that no evidences of nerve endings or of nævoid tissue were found in the tissue, which consisted entirely of fat. The patient presented herself for examination at intervals but the growths did not recur.

CASE 2.—A girl, aged 16 years, was admitted to Westminster Hospital on Jan. 20th, 1906, complaining of pain on the inner side of the right foot which had troubled her for a year. The pain was at its worst after walking but not severe enough to prevent her from getting about. On examination, on the inner side of the right foot there was a round



To illustrate the appearances in Case 2. The position of the lipoma is clearly shown at L., and its relation to the inner longitudinal arch of the foot is evident. I.M., Internal malleolus. A.S., Astragalo-scaphoid joint. The great toe is in a state of temporary spasmodic dorsi-flexion.

semi-cystic swelling about one inch in diameter. The highest point of it was one inch below the tip of the internal malleolus, and the lowest point half an inch above the heel. It presented the same physical characteristics as the tumours in the preceding case and was most prominent when the foot was forcibly dorsi-flexed. The swelling was removed and showed the same fatty and vascular character

as in the preceding case. When the patient left the hospital she was able to walk without pain.

These cases of acquired diffuse painful lipoma of the foot are clearly distinguishable from that form of "gigantism" known as congenital diffuse lipoma, where the affection is characterised by a general hypertrophy of the fatty and subcutaneous tissues, first affecting the toes or fingers. It spreads by direct continuity for a time; but as the hypertrophy increases, isolated masses of fatty material appear at some distance beyond the advancing edges. In time these masses become incorporated with the advancing growth. Incidentally, I should add that the microscopical characters of the congenital diffuse lipoma are entirely different from those seen in the painful acquired form of diffuse lipoma. In the former, while the main part of the section is occupied by fat and areolar tissue, yet the interfibrous spaces are crowded by small round cells, not unlike those seen in round-celled sarcoma. And clinically the diffuse congenital form of lipoma is somewhat akin to sarcoma in that it shows an inveterate tendency to recur very rapidly after removal. In the acquired diffuse form no such appearances are evident, but the blood-vessels are extremely numerous and somewhat hypertrophied. And in connexion with their origin cases are met with which throw some light on this point. Such an one is the following, occurring in a girl, aged 17 years, which was diagnosed as angioneuroma of the hands. In April, 1907, a swelling formed on the dorsum of the right hand towards the radial side. It was situated over the first and second metacarpal bones and appeared to surround more particularly the extensor tendon of the index finger. The growth was always extremely painful to the touch and sometimes gave her pain even when the part was at rest. The skin over the tumour was hotter than in other parts of the hand, at the centre it was red, but there was a dark bluish discolouration around the circumference. The swelling increased rapidly while she was under observation for a few days previous to operation. A mass of nævoid tissue of about the size of half a crown was excised through a T-shaped incision. Dr. Hebb made the following report on the specimen: "It consists of fibrous and adipose tissue in which are numerous blood-vessels, the arterial walls being extremely thick." The left hand had been similarly affected in January, 1907, when the girl was operated upon by my colleague, Mr. Arthur Evans. In January, 1908, she reappeared at the hospital, as the angiomatous condition had re-formed on both hands. The striking feature of her case was the extreme tenderness, and the parts were so sore that it was impossible to examine them properly. Further, the swellings were hard and appeared hotter to the touch than elsewhere. An operation was undertaken by Mr. E. Rock Carling and a considerable mass of nævoid tissue was dissected from the extensor tendons over which it had spread.

Now in the case of acquired painful lipoma, and in the nævoid condition just described, in which fat was present, we have certain conditions in common—namely, their excessive vascularity, the size and thickness of the vessels, and their extreme tenderness. It is difficult to account for the tenderness. It may be due to irritation of the nervi vasorum. Certainly no nerve fibres or endings could be discovered in the substance of the growths. Whether the acquired diffuse form is due to fatty degeneration of nævoid tissue is not proven, but this possibility should be borne in mind.

We now pass on to certain clinical points. Without careful observation the swellings due to acquired painful diffuse lipoma may partially fill up the arches of the feet, so that the condition can be mistaken for flat foot; but in all the cases I have seen, numbering now five, the tumours have always been between the inner edge of the sole of the foot and the internal malleolus, and have not extended further forward than the anterior part of the sustentaculum tali. In no case have I seen them over the scaphoid or internal cuneiform bone. The striking features about them are their slow growth and their indolence, their extreme tenderness, and their vascularity when cut into. It is also noticeable that any pressure, whether arising from an irregularity on the inside of the boot or from the employment of a "flat-foot" pad, renders the patient completely unable to get about on account of the pain. Finally, on removal, they do not, as far as I know, recur, and in this respect are entirely different from the congenital diffuse lipoma.

Harley-street, W.

SANITATION IN A TERRITORIAL CAMP.

BY J. S. WARRACK, M.A., M.D. ABERD., D.P.H. CANTAB.,
CAPTAIN, R.A.M.C. (T.); SURGEON-CAPTAIN, A.M.R. (O.); ASSISTANT MEDICAL OFFICER, PORT OF LONDON SANITARY AUTHORITY.

THE following account gives some idea of the methods of sanitation and sanitary training adopted at the Kent Brigade training at Walmer from July 25th to August 8th, 1908.

On appointment as sanitary adviser to the senior medical officer of the brigade I went over the ground and thought out the best means whereby the sanitation could be carried out so far as possible on the same lines as in the regular forces. I found that the methods used in the Hampshire training and manœuvre area 1907 were most applicable. The troops, over 2000 in number, consisting of four battalions of infantry, a battalion of cyclists, two field ambulances, Army Service Corps, and a cadet battalion (during the second week) were camped on the slope of a hill facing the sea. The formation of the hill was of chalk on the upper two-thirds and of loam on the lower one-third. The camp was divided into two parts by a public street kerbed and channelled. There were open fields to the south and to the north a plantation of trees. On my arrival I found that the camp had been pitched and that deep latrines had been dug on the flanks, which were already foul. The kitchens and the ablution benches adjoined the main street. There were no destructors and no urinals and the refuse tubs were uncovered. The latrines on the south flank were well away from the tents. Those on the north flank were in undesirably close proximity to the tents and the stores and to a public footpath. There was really no other place where they could have been dug. Water was laid on in iron pipes and standpipes were to be found in various convenient positions. It was obvious then that dirty water could be disposed of separately from excreta.

A detailed inspection was made on July 26th. Arrangements were made for inspecting all food supplies, dry canteens, kitchens, horse lines, and the sanitary accommodation generally, and for lectures to be given on sanitation to the troops. An official inspection was made every morning by the senior medical officer and myself, and I paid frequent visits to all parts of the camp at uncertain hours during the first few days.

Food inspection.—The meat supplied throughout was good. On three occasions meat was rejected: (1) a carcass of frozen mutton, which showed signs of recent pleurisy in the pleural cavities; (2) a forequarter of frozen meat which was tainted; and (3) a forequarter of frozen meat supplied instead of home-killed meat. The bread supplied was of good quality. Dry canteens were inspected and all food and comestibles ordered to be covered with muslin or wire-netting. Perishable food supplies were ordered to be kept in cool places and covered up. The cooking arrangements varied from field ovens to portable kitchens, stoves, and boilers. No two units were alike in their cooking arrangements. Messing as regards the battalions was in tents. This I consider to be undesirable, it fouls the ground and attracts flies. There is much unnecessary waste. A large proportion of the contents of the refuse tubs were found to consist of bread, butter, and cooked meat. There is no accommodation in tents for the keeping of rations nor for washing up. The field ambulances and the cadet battalion messed in marquees; their ground was always free from food refuse and was much easier to keep clean. If attention is given to detail men can be as easily fed in messes in marquees as on transports. They are more comfortable. The ground remains clean and labour is saved in the picking up of scraps and in the washing up afterwards.

Disposal of refuse.—Large tubs or barrels were supplied by a contractor who removed the food refuse periodically. He was required to supply wooden covers for the tubs. This, after a little pressure, he did. The lids, however, were not invariably to be found on the tubs.

Dry refuse.—On my suggestion each unit in the camp built a destructor. These were circular structures 3 feet in height and 2 feet across, with openings at the bottom to admit air. They were made of sods strengthened by wood battens, or of bricks puddled with clay. The plan was shown to the pioneers, and it was left to their ingenuity to carry it out in detail. These destructors worked well; dry rubbish, tins, &c., were burnt up, and they lasted all the camp. They were most satisfactory.

Dirty water.—This was drained off by surface drains into the paved gutter of the street except in the case of one regiment where special arrangements had to be made. These short drains ran obliquely and were banked up. The ground around the benches was paved with shingle from the beach and so kept dry. At the bottom of the street at each side two large deep soakpits were dug to take up the excess water. These being in the loam, and measuring each 8 feet by 6 feet by 6 feet deep, had to be pumped out daily, there being practically no absorption. They were covered by improvised wooden covers.

Horse lines.—Special attention was paid to these. They were kept scrupulously clean throughout. The field ambulance horse lines were shifted after seven days, there being insufficient space. Manure tended to accumulate at first. I was unable to find any way of keeping it covered up. It is obvious that all manure in a standing camp should be kept covered up pending removal. The heaps were kept as far as possible from the tents and were cleared away daily. Swarms of small brown flies were always to be seen at these heaps but nowhere else. The almost complete absence of flies was a marked feature of the camp.

Latrines.—The system adopted here was to insist on the men covering their dejecta with earth. The means adopted to secure this were (1) by battalion orders; (2) by policing; (3) by having notice boards in the latrines where they could not help being seen; (4) by having heaps of earth piled up in front of the latrine seats; and (5) by the supply of cheap metal scoops. (The latter are so cheap as not to be worth the removal. The pioneer's spade, if used for this purpose, tends to disappear.) This system when carried out by all ranks acted well. Two battalions were exceptionally good. In them I was well supported by the officers of all ranks, so that the system had a fair trial, and I was quite satisfied with the result. It must be said, however, that if the system is to be relied on all ranks must give their hearty coöperation. Once the habit is acquired the method will be carried out spontaneously. The space allowed for latrines should not be limited. Quicklime is unnecessary; it is not to be depended on and when thrown into latrine trenches indiscriminately is useless. One of the sanitary squad should pay a visit several times daily and any excreta left uncovered should be covered by him with soil.

Urinals.—The pattern adopted was that of a central pit, 2 feet across by 3 feet deep, covered over, and with shallow trenches from 6 to 8 feet long, radiating from the centre like the spokes of a wheel, and with a fall to the pit. These trenches for a regiment of 500 will last over two days. Earth scattered periodically over the edges of the trench and into the trench itself in a thin layer will keep the trench from becoming foul. At the end of this period fresh trenches should be dug in the angles. At the end of the week a fresh urinal should be dug. There should be standing accommodation, allowing 2 feet per man, for from 24 to 30 men to urinate simultaneously. Four trenches should be in use at a time. Observations during the "rush" hour—i.e., before and after parades—showed that for a strength of from 300 to 400 men, this accommodation was the minimum, otherwise men would foul the surrounding ground and the latrine screen. Where possible I arranged that the screens should be kept well clear of the trenches and that the urinal should be separate from the latrine. Some of the units had urine tubs. These were used in addition to the trenches and were emptied into the pits.

Hawkers.—These were not allowed in camp. Various vendors of shell-fish, ice-cream, and fruit congregated outside the camp, out of the jurisdiction of the military police. I visited their barrows occasionally. The shell-fish and ice-cream were of very dubious origin. The fruit sold by local tradesmen I found to be of good quality. One or two cases of gastric trouble attributable to the consumption of shell-fish were reported, and it would have done no harm had samples of these been taken by the local authorities for analysis.

Lectures on sanitation.—These lectures were given by me to all units and were attended by all ranks. They were short and given in simple language, and included such points as fouling the ground, covering the dejecta, clothing, cleanliness, care of the feet, water discipline, and the eating and drinking of unwholesome food and water. I think that these lectures had a good effect. They should not be given in the afternoon when men are tired and tend to fall asleep. More technical lectures on food and meat inspection, infectious disease, contagious disease in animals, &c., were given to the Royal Army Medical Corps and Army Service Corps units.

Bathing parades were held and feet inspections were made. I was struck by the large number of deformed feet amongst the men.

Infectious disease.—One case of suspected enteric fever occurred in the first three days of the camp. The patient had been in contact with cases of enteric fever at his home. He was removed to Dover. His tent was vacated and all bedding, blankets, &c., were disinfected by steam. Contacts were bathed, had fresh clothing issued, and were inspected daily for the rest of the camp. A fresh latrine and urinal were dug and particular attention was paid to see that all excreta were covered. The sanitary arrangements of the regiment where this case occurred demand some mention. The kitchens and ablution benches were placed at the top of the hill on the opposite side from the main street. Surface drains were dug and three large soak-pits into the chalk at different levels. Interceptors filled with straw were dug at the entrance to these pits. The water soaked away rapidly. The straw took up the grease and soap. The pits were used alternately and periodically the sides were scraped down. They lasted well all the camp and no overflow occurred. In the same way all the urine was absorbed by two narrow and deep urine pits. I was materially assisted by the regimental medical officer and by the quartermaster of this regiment, the 5th Royal West Kent, in carrying out this plan. The latrines and urinals in this case were rather too close to the tents and stores for safety. These officers made it their business to see that the advice of the senior medical officer and myself was acted upon and their assistance was invaluable.

The Cadet Battalion of the Queen's Regiment was encamped at the top of the hill, next to the 5th Royal West Kent Regiment, during the second week. I was afforded the opportunity of planning out sanitary accommodation for them previous to their arrival. In this case the kitchens and ablution arrangements were kept separate. Covered soak-pits with intercepting traps filled with straw were dug. These soak-pits took up and absorbed all the waste water. The straw was burnt in the destructor when necessary and fresh straw put in the traps. These soak-pits lasted throughout the seven days of the training. A destructor was built. Covered refuse barrels were provided and notices were posted at each distinguishing the kind of refuse to be thrown into them. The latrines for the men were dug on the shallow trench pattern, the urinal on the wheel pattern. 15 of the former were dug in two rows measuring 3 feet long, 2 feet deep, and 1 foot across, and with an interspace of 2½ feet. The number using them would be about 200. Toilet paper was supplied in empty coffee tins. Notices were posted up, and scoops and heaps of earth supplied. The company officers were interviewed by me. The result was that this latrine was always clean. A few minutes' work twice a day sufficed to keep the place shipshape. A rail to hold on by was found to be unnecessary. The squatting position across the trench was used. The first series of trenches lasted three days; these were then filled in and fresh ones dug in the interspaces from 2 to 3 feet deep. These lasted the remaining four days and could have lasted a day longer. The deep trench system was used by the officers and non-commissioned officers and was not nearly so satisfactory. This camp was always found to be clean at whatever time it was visited.

I made some observations on the time taken to dig these trenches. One of the field ambulances had pitched a camp on one of the manœuvre areas. I found that three men with spades and picks could dig three of these trenches in half an hour. Given plenty of space and men who can handle spades it is obvious that these shallow trenches involve much less labour and are more satisfactory in every way than the old pattern deep ones. A uniform pattern of latrines and urinals should be used by all ranks. Screens should not be limited in number. Pockets to button up should be made in each screen. Into these the scoops referred to should be placed. There would be little addition to the weight or space when the screen was rolled up and these articles would be on the spot when wanted.

I may add that I am much indebted to Colonel E. Satterthwaite, V.D., the colonel commanding the brigade, for the continuous interest which he took and for the support which he gave me in carrying out my duties.

Gravesend.

OBSERVATIONS ON A CASE OF HUNTINGTON'S CHOREA.

BY J. J. W. EVANS, M.R.C.S. ENG., L.R.C.P. LOND.,
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As is well known, the diagnosis of the above rare disease rests upon the following facts: (1) Choreic movements which are of a hereditary nature; (2) difficulty of articulation leading to a slurring character of speech; (3) progressive dementia and emaciation; and (4) exaggeration of the deep reflexes. All the above symptoms make their appearance during the middle period of life, most frequently between the ages of 30 and 40 years. A curious fact about this case of Huntington's chorea which came under my observation quite recently was that the symptoms increased at the time of the menopause, and on this account the story may afford some interesting matter.

On June 3rd, 1907, a woman, aged 41 years, was admitted into the Westminster Hospital under the care of Dr. R. G. Hebb. Until 1902 she had always enjoyed good health; in that year, however, she began to develop spasmodic movements of the face and arms. Soon afterwards the speech became affected, rendering articulation progressively more difficult. Her character also changed and from being bright and cheerful she became moody and indifferent to her surroundings. Menstruation was regularly performed until September, 1906, when the function suddenly ceased, and at this time all the symptoms became extraordinarily worse. The moodiness developed into definite dementia; so acute became the movements that they prevented the patient alike from feeding herself and from walking. Simultaneously with this state of affairs progressive dysphagia made its appearance, while she became more and more emaciated in spite of an abnormally large appetite. In this connexion I may mention that at the time of admission into the hospital she was unable to protrude the tongue. At this time also constipation and insomnia made their appearance and continued troublesome during the remainder of her life. All these combined circumstances rendered the patient almost beyond recognition.

The movements which were present in all the limbs were most marked in the arms; they were of a continuous whirling character, too quick and jerky for athetosis, and they ceased during sleep. There were no fibrillary tremors of the muscles. The deep reflexes were not markedly exaggerated, but the plantar reflexes on both sides were extensor in type. The pupils were normal in reaction and in size. Sensation was unimpaired, and on examination of the cerebro-spinal fluid nothing abnormal was discovered. The cardio-vascular, respiratory, and urogenital systems presented no abnormality. Towards the end of June, 1907, there was repeated incontinence of urine and fæces and on June 22nd a nasal discharge developed. About this time the patient become noisy and insomnia became worse, necessitating the administration of drugs. On the 29th the temperature, which had up to this time remained normal, suddenly rose to 102·4° F. and continued high and remittent until on July 2nd it reached 105° and the patient died. During this febrile period the breathing was very rapid but there were no physical signs to account for the condition.

The family history is valuable and interesting as the grandfather and father of the patient were both similarly affected, but to a less degree physically, as, unlike the patient, they were never bedridden, both ending their days in lunatic asylums. The patient's brother and his children have shown no signs of the disease. The grandfather, it was said, was at some distant time bitten by a mad dog, and although actual evidence of this is not clear I think it should be mentioned as a possible explanation of his mental condition.

A post-mortem examination was performed 27 hours after death. The body was emaciated and rigor mortis was present. On opening the skull the dura mater was found to be everywhere thicker than normal; its inner surface was red and injected, and from it could be separated a delicate membranous exudate. There were much œdema of the arachnoid mater and excess of cerebro-spinal fluid. There was slight adhesion between the mesial surfaces of the frontal lobes. The brain weighed 40 ounces; its substance was soft and flabby and the cortical grey matter was thin; the pia mater was not thickened and could be easily stripped from the surface of the cerebrum. The lungs showed scattered broncho-pneumonic patches throughout both lower lobes; there was a small amount of fibrinous lymph in each pleural cavity. The remaining viscera showed no changes of pathological importance. Death resulted from pneumonia.

Microscopically the exudate upon the inner surface of the dura mater was seen to consist of blood-stained fibrin. The cortical pyramidal cells of the cerebrum had the appearance of shrinkage and there was a clear space around them. I can find no trace of granules which are described by French authors around these cells. No other changes have been detected.

I wish to offer my sincere thanks to Dr. Hebb and Dr. J. M. Bernstein for their valuable assistance.

Reviews and Notices of Books.

Surgery, its Principles and Practice. By Various Authors. Edited by WILLIAM WILLIAMS KEEN, M.D., LL.D., Emeritus Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. Vol. III., with 562 text illustrations and 10 coloured plates. London and Philadelphia: W. B. Saunders Co. 1908. Pp. 1132. Price 30*s.* net.

A GLANCE at the list of the contributors to the third volume of this System of Surgery is sufficient to show the high character of the work. All the names are those of well-known surgeons and each has dealt with that subject with which he is best acquainted.

Dr. Harvey Cushing of Baltimore has supplied the section on the Surgery of the Head. It is excellently written and fully illustrated. The author might have explained that the reason why in fractures of the skull very little callus is formed is that there is complete absence of movement. The moving of the fragments is the main cause of the formation of callus and the callus formed is directly proportional to the amount of movement. Dr. Cushing mentions that he has frequently replaced a trephine button of bone after boiling it and he has never seen it fail to heal in place; it is well known that a trephine button can be replaced with safety, but we do not remember to have seen hitherto any case mentioned in which the button was boiled first. Dr. Cushing discusses very fully the question of the best method of draining a hydrocephalus. He determines whether the foramen of Magendie is open by puncturing simultaneously the ventricle and in the lumbar region, and if the tension levels of the two are the same the foramen of Magendie must be open. The analyses of the two specimens of fluid withdrawn should also be identical. In such a case he has practised subperitoneal drainage in the following manner. A few days after the punctures a laparotomy is performed, the posterior layer of peritoneum to the left of the rectum is split, and the body of the fifth lumbar vertebra is exposed; the bone is trephined by means of a very small calibre trephine and a small cannula is inserted. Then a laminectomy is performed, the subarachnoid space is opened, the strands of the cauda equina are separated, and another cannula is inserted and pushed forward until the two lock. Both wounds are closed and drainage of the cerebro-spinal fluid occurs at first into the peritoneum, but later only into the retro-peritoneal space. Dr. Cushing tells us that he has carried out this method in 12 cases with a considerable measure of success. As this is the first published account of this novel and interesting procedure we should have liked more details of the cases in which it has been employed. Intracerebral hæmorrhage has received very little surgical attention hitherto, but Dr. Cushing thinks that it may be possible to relieve the pressure excited by an effusion of blood into the hemisphere; he advises a small incision down

to the clot, and through this opening he tells us that the clot will extrude itself. He has performed this operation on three cases. A very useful chapter is that in which the technique of intracranial operations is described. The whole article extends to 276 pages and is a complete treatise on the surgery of the head.

Dr. G. Wyllys Andrews of Chicago has contributed the section on the Surgery of the Neck; it is fairly inclusive, but it does not contain the surgery of the thyroid gland or the larynx or œsophagus. It deals with branchial cysts, torticollis, the lymphatic glands and blood-vessels of the neck, and the salivary glands. It contains a good account of the dissection of the glands of the neck in cases of carcinoma.

Dr. Albert Kocher has supplied the chapter on the Diseases of the Thyroid Gland. The most noticeable point is the strong approval expressed in favour of the surgical treatment of Graves's disease. He mentions that Professor Theodore Kocher has performed the operation of thyroidectomy 200 times for this condition, that the mortality has been 4·5 per cent., and that in 85 per cent. of the cases the patient has completely recovered. In severe cases Dr. A. Kocher considers that it is advisable to perform one or two preliminary ligations of the superior thyroid artery. The operation is, in his opinion, indicated in all cases that do not present degeneration of the heart muscle with irregular pulse, low blood pressure, or periodical attacks of what has been called "delirium cordis." Many surgeons in this country have hitherto objected to partial thyroidectomy for Graves's disease, but the opinion of Professor Kocher should count for much. No new ideas are expressed in the diagnosis or treatment of goitre, but an excellent account of this condition is given. Unfortunately, throughout the whole chapter the word "struma" is employed in the German meaning of the word; it is a pity to attempt to introduce this meaning into English, it can only lead to confusion.

Dr. Harmon Smith of New York has written the chapter on the Surgery of the Nose and its Accessory Sinuses. He considers that it is safest when using paraffin injections for a "saddle nose" to inject the paraffin in the solid form. A very good account is given of the surgery of the frontal sinuses.

The Surgery of the Larynx and Trachea is described by Dr. George Emerson Brewer of New York. He gives some very effective illustrations of the method of using Killian's bronchoscope. He has also supplied the account of the Surgery of the Thorax. We cannot agree with the writer when he says that in cases of tuberculous empyema it is better to wait until spontaneous rupture is imminent. The tuberculous cases require greater care to prevent septic infection but the results of timely careful operation are better than would be imagined from the account given here. In the description of the treatment of hydatid cyst of the lung aspiration is condemned on account of the danger of infecting the pleura, but the greatest danger comes from the risk of rapid death from rupture of the cyst into a bronchus at the moment of aspiration. Very brief accounts are given of the various forms of thoracoplasty; it would have been well to treat this subject more fully. The surgery of the chest is yearly becoming of greater importance and it seldom receives adequate treatment in text-books.

Dr. J. M. T. Finney of Baltimore gives a satisfactory account of the Surgery of the Breast, especially of its most important part the operation of excision of the breast for carcinoma. Mr. Edmund Owen writes very clearly on the Surgery of the Mouth, Teeth, and Jaws We quite agree with him that harelip pins should never be used for harelip. He speaks favourably of Brophy's operation for cleft palate in small children. The method is hardly employed in this country as much as it deserves. Dr. J. Chalmers Da Costa of Philadelphia is responsible for the chapter on the Surgery of the Tongue. For the removal of small masses of malignant disease affecting the tongue he does not consider it necessary to remove the whole tongue, for, as he points out, local recurrence is much rarer than recurrence in the glands. He favours removal of the tongue through the mouth and then, after a short interval, removal of all the lymphatic glands of the neck on the same side and a little later on the opposite side.

The remainder of the book is devoted to abdominal surgery, but includes the œsophagus. Dr. J. C. Munro of Boston writes on the Technique of Abdominal Surgery, on the surgery of the abdominal wall and of the peritoneum and the retroperitoneal space. He is very much in favour of the semi-sitting or Fowler position for the limitation of peritoneal infection. He insists on the importance of the fact that the diaphragmatic peritoneum has much greater absorbing power than the peritoneum lining the pelvis. Dr. G. Gottstein of Breslau is responsible for the article on the Surgery of the Œsophagus, and it is very good indeed; it is especially full in the description of the methods of examination. Mr. A. W. Mayo Robson has written the account of the Surgery of the Stomach. His views on gastric surgery are so well known in this country that there is no need to discuss them here. He prefers the posterior operation for gastro-enterostomy and describes clearly the exact method which he prefers. He finds the "bobbin" which he devised very useful and he still uses it. Dr. W. J. Mayo and Dr. C. H. Mayo have written the chapter on the Surgery of the Liver, the Gall Bladder, and the Biliary Ducts, and it is hardly necessary to say that it is very good. The authors are not in favour of removing the gall-bladder in ordinary cases of gall-stones, though they acknowledge that it is as obsolescent as the appendix. They prefer the vertical incision of Bevan for exposing the gall-bladder and bile-ducts, enlarging it towards the middle line above and outwardly below if more room is needed. Mr. B. G. A. Moynihan is responsible for the chapter on the Pancreas and on the Spleen. The most important portion of the former chapter is that devoted to pancreatic cysts. In the case of wounds of the spleen Mr. Moynihan advises that the wound should be sutured when possible and that excision should only be performed when suture is impossible.

All the articles are adequately illustrated and a full index is appended.

Contributions to the Study of the Early Development and Imbedding of the Human Ovum. I. An Early Ovum Imbedded in the Decidua. By THOMAS H. BRYCE, M.A., M.D. Edin., Lecturer in Anatomy, University of Glasgow; and JOHN H. TEACHER, M.A., M.D. Glasg., Lecturer on Pathological Histology, University of Glasgow. *II. An Early Ovarian Pregnancy.* By THOMAS H. BRYCE, JOHN H. TEACHER, and JOHN M. MUNRO KERR, M.B., C.M. Glasg., Obstetric Physician to the Maternity Hospital and Gynæcologist to the Western Infirmary, Glasgow. With ten plates and 12 figures in the text. Glasgow: James Maclehose and Sons. 1908. Pp. 93. Price 12*s.* 6*d.* net.

THE opportunities for obtaining an early human ovum in a condition fit for investigation occur of necessity but rarely and Dr. J. H. Teacher and Dr. T. H. Bryce are to be congratulated on their good fortune in this respect. They have been able to examine carefully what is perhaps the very youngest human ovum which has been described, and the results of their work they have published in a monograph which also contains a description of a specimen of early ovarian pregnancy removed by operation by Dr. Munro Kerr. While it is true that recent work in comparative

embryology, especially that of Hubrecht on tarsius spectrum (lemur), has thrown a great deal of light on many vexed problems, yet our knowledge of the very early stages of the development of the human ovum itself is excessively meagre and it is fortunate that the present specimens should have fallen into the hands of such accomplished investigators as Dr. Teacher and Dr. Bryce. The problems in human embryology which are possibly of most general interest are those concerned with the early implantation of the ovum, the development of the placenta in its most primitive form, the development of the amnion, including the vexed question of the inversion of the germinal layers, and the problem which we may consider to be determined finally by the present specimen of the origin of the plasmodial investment of the villi, or the syncytium.

In a consideration of the different stages of development of the human ovum obviously the greatest importance must be assigned to a correct determination of the ages of the different ova which have been described. This has usually been determined arbitrarily by the so-called convention of His who reckons the interval of time which elapses between the date on which the first omitted period should have commenced and the termination of the pregnancy as the age of the ovum. The fallacies likely to arise from the use of such a formula are obvious, and the authors of this monograph have rejected this method and from a determination of the probable age of their own specimen, a review of the other recorded cases of early human ova, and a consideration of the known facts of comparative embryology have arranged a chronological table in which in many instances the estimated ages of the various early ova recorded differ very markedly from those assigned to them by their original describers. In the present case very precise and trustworthy data were obtainable and the authors conclude from a consideration of these that the ovum was about from 13 to 14 days old. In arriving at this figure they have allowed 24 hours as the time likely to have elapsed between insemination and fertilisation and 24 hours for the occurrence of the abortion.

From a careful consideration of the known facts and taking the estimated age of the present ovum as a basis on which to work, they conclude that it is the earliest human ovum hitherto described in the literature, and that Peters' ovum which he considers as only three or four days old is in reality from 13½ to 14½ days old. In the same way they have assigned ages to all the other human ova of which the details are recorded with sufficient accuracy, with the result that they arrive at a series of ova of gradually increasing age, the estimated ages of which correspond much more accurately to the facts determined by comparative embryology and to their own varying degrees of development than they do on the assumption that their ages are such as have been imputed to them previously by the various authorities who placed them on record. No doubt this table will meet with a considerable degree of adverse criticism from the various gentlemen the accuracy of whose deductions is in many instances impugned, but for our part after a careful consideration of the data as set out by the authors we are inclined to agree with their estimate of the age of their own ovum and of the others which have been described. If the contention be admitted as true that this is the earliest human ovum which has been met with hitherto, then its interest is obviously very great, and it throws a great deal of light on several vexed problems. For example, it shows a condition of the human blastocyst quite unsuspected, since its walls are almost entirely plasmodial, with the exception of a thin cellular layer of trophoblast, the so-called cyto-trophoblast forming the innermost lining of the blastocyst. Unfortunately, the early embryonic rudiment has been displaced and torn but the conclusions of the authors seem to us justified—namely, that the larger of the two vesicles present in the interior of the blastocyst is in reality an amnio-embryonic cavity in which there is as yet no distinction between amniotic and embryonic ectoderm, an earlier stage therefore to that shown in Peters' ovum, in which these two layers are already differentiated. In the human subject probably, as in tarsius, the amnio-embryonic cavity is excavated in the interior of the so-called embryonic cell mass and the floor of the cavity at first concave and therefore apparently inverted becomes the embryonic plate while the roof becomes the amnion. Another interesting fact which the study of this early ovum has demonstrated is that the early mesoblast entirely fills the blastocyst and the extra-embryonic cœlom already present in Peters' ovum appears to be formed by a splitting of this mesoblast.

Much light has been thrown on the process of the imbedding of the early human ovum in the uterus by the study of this important process in the lower animals and it seems likely that the process in man resembles very closely that seen in the case of the guinea-pig. The authors consider the exact process to be as follows: the early blastocyst, still of very small size, comes to rest on a depression in the uterine mucous membrane, destroys the surface epithelium and, continuing its destructive activity, passes into the space in the decidua which has thus been produced. Necrosis followed by solution of a considerable mass of the endometrium follows and in this way the large implantation cavity is formed, the development of the decidua beginning immediately after the destruction of the epithelium. The ovum now becomes surrounded by a thick covering layer of trophoblast, by which it ultimately becomes fixed to the uterine decidua. The idea that the uterine epithelium is necessary for the production of the plasmodial layer of the trophoblast has already been disproved by Catherine van Tussenbroek in her description of a case of ovarian pregnancy, and the second specimen described in this monograph seems to show that it is possible for an ovum to become imbedded in the stroma of the ovary, and therefore it cannot be the follicular epithelium of the Graafian follicle which is converted into the plasmodium; the proof, then, now seems complete that the latter is of entirely fœtal origin.

The importance of these two specimens can hardly be overestimated, and we congratulate the authors on their good fortune in obtaining the material and on the most excellent use which they have made of their exceptional opportunity.

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THIS work—and it is an excellent one—is not a complete review of the physiology of the alimentary tract; it is rather a series of monographs dealing with various phases of physiology and embodying the more modern physiological investigations on the subjects with which it deals. Its scope will be best understood by grouping the subjects discussed—viz., the mechanical phenomena of alimentation; the juices poured out upon the food and their chemical constituents; ferments and fermentations; the actions of enzymes and bacteria found in the human alimentary tract; regulation of the salivary, gastric, pancreatic, biliary, and intestinal secretions; and the alimentary canal as an absorptive and excretory organ. A very full and interesting account is given of the movements of the stomach and intestines as revealed by the x rays and several full-page x ray photographs by Cannon of the movements of the food in the intestine are reproduced. The intestinal movements are usually classified as swaying or pendular and peristaltic. The investigations of Cannon, however, have shown that those known as "rhythmic segmentation" movements are the most common. Cannon has calculated that a slender string of food may commonly undergo division into small segments more than a thousand times without changing its place in the intestines. The purpose subserved by these movements is obvious, for in the large intestine the commonest movement is antiperistalsis—i.e., the contents in the middle of the cæcum are moved towards the stomach and away from the rectum. There is a full discussion on the various conditions and mental states which influence intestinal movements and a final chapter deals with saline cathartics.

The new nomenclature is adopted for the naming of ferments—i.e., adding the ending *ase* to the root of the Latin or Greek name of the substance upon which the ferment acts—e.g., amylase and lactase; for pepsin we have acid-proteinase and for trypsin alkali-proteinaise, while for the ferment discovered by Weinland, which prevents the proteolytic ferments from acting on intestinal worms, and it may be on the walls of the intestine itself, we have the term anti-proteinase; crepsin becomes protease and invertin sucrase; the ferment which splits up arginin into ornithin and urea is arginase, and so on. The chapter on ferments and fermentations is excellent, and in it are set forth the views of Ostwald and Cohen. A ferment does not initiate a chemical reaction but only alters its velocity, so that in infinite time the amount of chemical change brought about by a ferment is independent of the concentration of the ferment. The ferments are usually characterised by a great sensitiveness to comparatively low temperatures. The reactions which are catalysed by a ferment are rarely, if ever, complete, unless the products of the reaction are removed as soon as formed. The reason for the incompleteness of the chemical reaction lies in the fact that "the ferment is continually reforming from the products of the reaction, the substance or substances with which the ferment was mixed originally." This *reversibility* of the action of an organic ferment is one of its fundamental characteristics. A full account is given of the specific actions of the several alimentary ferments. There is an interesting account of the views of Conradi and Loevenhart on the coagulation of milk (p. 117). The views of Emil Fischer and Abderhalden on the polypeptides and the reconstruction of the protein molecule are discussed and there is a valuable section on the old question as to why the alimentary canal does not digest itself, a question as old as the one propounded by the veteran cynic as to the universal solvent:—What kind of a vessel will be needed to hold it?

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We have said enough to show how interesting, instructive, and useful this small but comprehensive work is. We commend it most cordially and with perfect assurance as to its value to the advanced student of medicine and physiology, as well as to practitioners of medicine.

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Health at its Best versus Cancer. By ROBERT BELL, M.D. Glasg., F.F.P.S. Glasg., formerly Senior Physician to the Glasgow Hospital for Women. London and Leipsic: T. Fisher Unwin. 1908. Pp. 320. Price 5*s.* net.—In so far as this book is an appeal for more hygienic living, for more fresh air, for a simpler diet, and for a more natural life, we cannot but agree with it, but when the author maintains that surgery "in no instance can ..... possibly hold out the remotest prospect of conferring any benefit whatever" in cases of malignant disease we must dissent entirely.

Nowhere in the book does he state expressly the cause or treatment of cancer, but he suggests that cancer is brought about by unhygienic modes of living and that dietetic methods of treatment will help to remove it. We find some curious statements in the book. In speaking of the thyroid gland Dr. Bell says on p. 241: "To enable it to perform this duty [the destruction of poisonous substances in the blood] more efficiently, as one observer has stated, the blood performs two circuits through the thyroid before its return to the heart." We should like to know where this interesting fact is recorded and who observed it. In the introduction on p. 13 we are told that Metchnikoff states that in the intestine there are developed daily 28,000,000,000 of bacteria. On p. 190 Metchnikoff is again quoted, but now the number has risen to 128,000,000,000,000, or more than 4000 times as many. Perhaps in these high figures a few ciphers more or less make little difference.

School Hygiene and the Laws of Health. By CHARLES PORTER, M.D., B.Sc. Edin., M.R.C.P. Edin., of the Middle Temple, Barrister-at-Law. Second edition. London, New York, Bombay, and Calcutta: Longmans, Green, and Co. 1908. Pp. 335. Price 3*s.* 6*d.*—*The Wonderful House that Jack Has: a Reader in Practical Physiology and Hygiene.* By COLUMBUS N. MILLARD, Supervisor of Grammar Grades, Buffalo Public Schools. New York: The Macmillan Company. 1908. Pp. 359. Price 3*s.*—*Ball Games and Breathing Exercises.* By ALICE R. JAMES. With Preface by HARRY CAMPBELL, M.D., B.S. Lond., F.R.C.P. Lond. London: Longmans, Green, and Co. 1908. Pp. 61. Price 1*s.* 6*d.*—This trio of books dealing with different branches of school hygiene may be conveniently considered together. The first and third of them are manuals of instruction addressed to teachers; the second, as its title suggests, is intended as a lesson-book for young children. We need say little about Dr. Porter's work, which was originally based on lectures to school teachers, save to record its second edition, for we reviewed it at length when it first appeared. We were then able to say that it was an admirable text-book in elementary physiology and hygiene for the instruction of school teachers, and a fresh acquaintance with it confirms our opinion. It deserves to become a standard text-book in a subject the importance of which has been so prominently endorsed by recent legislation. As was fitting, Dr. Porter has added a useful little chapter upon medical inspection of schools as it concerns the teacher, rightly laying stress upon the enormous assistance which he or she can afford to the school medical officer by sympathetic coöperation in his inspection work. We regret that Dr. Porter has not seen his way to add a chapter on punishments, a subject upon which his experience should prove of value. The next book is of a very different order. It is an attempt to familiarise children between their fifth and eighth years with the outstanding principles of physiology and hygiene. We think that Mr. Millard has made a mistake in his method. In *The Wonderful House that Jack Has* he has produced a book of the "my dear little children" order containing a number of pictures, some of which irresistibly recall that delightful ephemeron, *Wisdom While You Wait.* In his preface he states that most school physiology books are too full of technical terms and quotes to prove his point. In turn it is legitimate to ask him whether words like "preëstablished," "preëminent," "detrimental," "expectoration"—we pick at random from his pages—are quite suitable in talking to children of tender age, and whether they will profit by hearing about the treatment of adenoids, errors of refraction (including astigmatism) and their correction, the methods of detecting oleomargarine from butter, or of disinfecting a room after enteric fever. The author has, moreover, a habit of dropping into such sententious remarks as these: "But what about fish? How do these finny dwellers in the water world, which so many people greatly enjoy luring from their liquid home, help in our structure?" And again, "Who has not felt pity for Esau because he allowed his greed for pottage to lose him a commanding position and valuable estates? ..... Candy and rich desserts are the pottage most likely to lure away our precious inheritance." This strikes us as the way not to address a "Jack" of six, and however much it may be desirable to instil him with a hatred of tobacco it is surely not ingenuous to conclude a passage worthy of the royal "Counterblaste" with the statement that "we rarely, if ever, find one who does not regret having burned his money up in this way." But with all these faults Mr. Millard has written many pages which would form excellent lessons for little ones, especially those concerning food, ventilation, and breathing. We think, though, that he would have been better advised to adopt a style more suited to older children and to leave the infants to the oral instruction of their teachers. His text-book is altogether too ponderous for babies. The third little book before us gives an account of an ingenious series of physical exercises performed with the help of indiarubber balls, which have been devised by Miss Alice James and have received the blessing of Dr. Harry Campbell. They aim at grace and lissomeness rather than hard and bulging muscles, and they should help to cultivate ambidexterity. So far as we can follow them from the figures and descriptions they are well adapted for the physical development of children and young women. It would be desirable for a teacher to see the exercises in practice before adopting them, and anyone desiring to do so is invited to attend an evening class at Northfield, 101–105, Stamford-hill. With such an introduction this little manual should prove of great service to gymnastic instructors and "games mistresses."

The Extra Pharmacopœia of Martindale and Westcott. Revised by W. HARRISON MARTINDALE, Ph.D., F.C.S., and W. WYNN WESTCOTT, M.B. Lond., D.P.H. Thirteenth edition. London: H. K. Lewis. 1908. Pp. 1164. Price 10*s.* 6*d.*—The authors are masters of the art of abstracting and of condensing the information scattered in literature. The only criticism, indeed, that is invited turns on the question as to whether the book is not after all overstocked with information, and yet it cannot fairly be said that the information throughout is without interest or value in some way or other to the medical man, pharmacist, and others. The advisability of including certain materials may be doubtful, while strictly they may not belong to the subject matter implied by the title of the work. There are sections, for example, on the analysis of milk and butter, on poisoning by certain gases, on mineral waters, health resorts, and so forth, which few, we imagine, would expect to find in a pharmacopœial work. The omission of these sections would have made room for further treatment of the more strictly pharmacological portions of the book. Nothing succeeds, however, like success, and the authors have doubtless very good reasons for including the treatment of what are after all collateral subjects. The book has now reached its thirteenth edition, the first issue having been published in 1883, and it is well known that its *clientèle* is a wide one and includes the members of different professions. The medical man, the analytical chemist, the pharmacist, the bacteriologist, and even the lawyer, commonly and rightly regard this work as a valuable and trustworthy source of reference. The copious references alone to the literature of pharmacology make a copy of the book well worth while possessing. This last edition includes a considerable amount of valuable new material, in proof of which mention need only be made of such subjects as the

new arsenical compounds, the application of the opsonic index to diagnosis, the use of lactic acid organisms for suppressing the growth of the colon organisms, the ophthalmic method of diagnosing tuberculosis, the modern methods of estimating the germicidal value of disinfectants, and so on. In order to meet the demand thus made on the pages of the new edition a large amount of the matter to which experience shows reference is less frequently made has been reset in small type. Lastly, in spite of the addition of 128 pages more than was contained in the previous edition, the use of a different paper has enabled the authors to produce in the present issue a thinner volume than the last.

JOURNALS AND MAGAZINES.

Annals of Tropical Medicine and Parasitology, University of Liverpool. Vol. II., No. 1, pp. 51; No. 2, pp. 92; No. 3, pp. 122. London: Williams and Norgate. Price 7*s.* 6*d.* net.—In No. 1 Sir Rubert Boyce and Dr. Anton Breinl contribute a communication on Atoxyl and Trypanosomiasis. They begin by giving a sketch of the early observations of the use of arsenic in the treatment of diseases caused by flies. They deal with the employment of the aniline colours in the combined treatment with arsenic and colours and then with atoxyl. The atoxyl treatment is dealt with at very considerable length. With regard to the existence of a second phase in the life cycle of the trypanosome stated so definitely as existing, we should have been more satisfied had reference been made to some of the recent work on blood platelets. The figures illustrating various forms of platelets in normal blood are similar to the figures of some of the stages in the life cycle of trypanosomes by Moore and Breinl, but some evidence appears to be necessary to show that no mistakes exist. Another paper on Trypanosomiasis and its Treatment by Atoxyl and other Drugs is contributed by Sir Patrick Manson. He describes his own personal observations in the treatment of this disease and ascribes great success to the atoxyl treatment. The first contribution to No. 2 is formed by the reports of the "Sleeping Sickness" Expedition to the Zambesi for the years 1907–08, by Dr. Allan Kinghorn and Mr. R. Eustace Montgomery, M.R.C.V.S. The first part forms an introduction to the actual reports themselves. The objects of the expedition from the Liverpool School of Tropical Medicine were to determine to what extent sleeping sickness had invaded British South African territory, to map out the distribution of tsetse flies, and to advise on means for checking the spread of sleeping sickness. Trypanosomiasis in animals as well as in man was dealt with on this expedition. This introduction consists very largely of correspondence between members of the expedition and various officials which deals mainly with the relation between the existence of the tsetse fly and game. The first interim report of the expedition is concerned with the incidence and prophylaxis of human trypanosomiasis in north-eastern Rhodesia. This report includes a discussion of preventive measures. The major measures suggested are: control of native movements; segregation of cases; and removal of villages from dangerous zones. The minor measures are: clearing; education of the natives; personal prophylaxis; and the destruction of tsetse flies, their larvæ and pupæ. The same authors' next report is on Trypanosomiasis of Domestic Stock in North-Western Rhodesia. It shows that trypanosomiasis in cattle and other domestic animals is very prevalent in the northern area of Western Rhodesia and that it is due to trypanosoma dimorphon, trypanosoma vivax, and another morphologically allied to trypanosoma Brucei. It is strongly suggested that these trypanosomes may be transmitted by glossina morsitans, stomoxys calcitrans, and a species of lyperosia. The authors also conclude that the treatment, as detailed in previous reports, shows certain indications of success, and they urge for facilities for a continuation of the work on this disease, which tends to stagnate the proper development of a wealthy mineral and agricultural country. The number also contains a report on the work of the Greek Anti-malaria League during the year 1907, by M. Hadjimichalis, President, and Jean P. Cardamatis, general secretary. It is shown that in 12 principal towns in Greece the average number of deaths from malaria is 287, or 9·8 per 10,000 inhabitants. It is pointed out, however, that these figures do not give any exact idea of the prevalence of malaria throughout the country, as this disease is much less frequent in the towns than in the rural districts. For instance, an examination of the school children held at Marathon in October, 1906, showed that enlargement of the spleen was to be found in every pupil. A detailed account of the work done by the League during the year 1907 is given. The Government has been induced to pass some laws with regard to the sale of quinine which will appear somewhat curious to us in this country. The plain of Marathon was taken in hand particularly by the League, and the reports of the local medical men showed that the number of cases of malaria in this district averages between 80 and 90 per cent. of the population. Considerable work was done in getting rid of the larvæ of mosquitoes. No. 3 of these annals contains the following papers. 1. A Peculiar Intralobular Cirrhosis of the Liver produced by the Protozoal Parasite of Kala-Azar, by Major Leonard Rogers, M.D. Lond., F.R.C.P. Lond., I.M.S. The author in this paper shows that the most chronic cases of kala-azar not infrequently terminate their course with ascites due to cirrhosis of the liver. The cirrhosis is of a peculiar intralobular type of uniform distribution and with a smooth surface to the organ. It is due to the protozoan parasite of kala-azar which may be found in the liver and other organs after death. This form of cirrhosis of the liver is much commoner in Lower Bengal than a "true natural cirrhosis," with which it has probably hitherto been confused. It is, however, much less common than atrophic cirrhosis due to unknown causes. 2. What is "Schistosomum Mansoni" Sambon 1907? by Dr. A. Looss. This contribution is a highly controversial one. The author seeks to show that a species of blood fluke, which was described by Dr. L. W. Sambon in 1907 as being a new species and called by him "Schistosomum Mansoni," is not a new species at all but is schistosomum hæmatobium. The author, Dr. Looss, certainly brings very weighty arguments in favour of his view. It is impossible to deal with this lengthy communication in detail. 3. The Prevention of Dengue Fever, by E. H. Ross, M.R.C.S. Eng., L.R.C.P. Lond., medical officer of health, Port Said. In this very brief communication the author puts forward a plea for the extension of the campaign against mosquitoes in Egypt. 4. The Life History of Trypanosoma Lewisi, by J. E. Salvin-Moore, Anton Breinl, and Edward Hindle. The authors in this communication deal with the life cycle of trypanosoma Lewisi in the same way as they previously dealt with trypanosoma Gambiense and trypanosoma equiperdum. 5. Notes on the Effects of Therapeutic Agents on Trypanosomes in respect to (*a*) Acquired Resistance of the Parasites to the Drug, and (*b*) Changes in Virulence of the Strains after Escape from the Drug, by Benjamin Moore, M.A., D.Sc. R.U.I., Maximilian Nierenstein, Ph.D. Berne, and John Lancelot Todd, B.A., M.D. McGill. The acquirement of resistance to various toxins and parasites by man and other animals has been much studied. In th present communication a less known, but allied, subject is dealt with. This is the acquirements of resistance to poisons

by protozoan parasites. It is already well established that trypanosomes become resistant to the drug employed and more difficult to drive out of the peripheral circulation with each fresh recurrence. Ehrlich also showed that in the case of rats treated with atoxyl the parasite itself, apart from the individual host, becomes resistant to the drug and when passed to fresh animals of the same species reaches finally a condition in which it is resistant or "fast" to the particular drug. The special point shown by the experiments described in the present communication is that this resistance only holds for the species of animals in which it has been established and disappears when the "fast" strain of trypanosomes is passed into another species of animal. 6. Observations on the Acidity and Alkalinity of the Blood in Trypanosome Infections, by M. Nierenstein, Ph.D., and J. W. Garrett. 7. A Contribution to the Morphology and Life History of Piroplasma Canis, by Anton Breinl and Edward Hindle. 8. The last paper in this number, by D'Emmerez De Charmoy, describes three new species of culex collected during the anti-malaria campaign in Mauritius in 1908.

The Edinburgh Medical Journal.—To the September number of this magazine Sir Alexander Russell Simpson contributes an illustrated paper on the use of Birth-stools in Egypt and incidentally relates the methods adopted among the lower classes in that country, which seem to have come down unchanged from early times. Dr. James H. Nicoll gives some statistics of hernia of the ovary in infants, and advocates operative treatment but not oöphorectomy; and Dr. H. A. Lediard records a case of successful treatment of a lymphangioma and comments on the unfavourable opinions expressed by the older generation of surgeons as to operative interference with these growths. Mr. Joseph Beard records the notes of two cases of meningitis admitted to hospital as enteric fever. Dr. J. Frank Crombie publishes the results obtained in some examinations of the blood in cases of whooping-cough, in which he found a leucocytosis to occur as a rule, the proportion of lymphocytes being always markedly increased; this feature may prove a useful aid in diagnosis. According to Dr. A. Dingwall-Fordyce Edinburgh milk contains on an average about 4 per cent. each of fat, sugar, and proteins—a simple and easily remembered formula.

ANNUAL REPORT FOR 1907 OF THE REGISTRAR-GENERAL FOR IRELAND.

WE are indebted to Sir Robert Matheson for a copy of this report which has just been issued by the Irish Stationery Office. This document derives additional value from the circumstance that it has been published within eight months of the close of the period to which it relates, in which regard it contrasts favourably with the corresponding reports for England and Scotland, the late appearance of which greatly impairs their usefulness for sanitary and statistical purposes. In some respects the Irish reports and returns differ from those of either of the sister divisions of the kingdom. In the first place, they contain particulars of mortality in the several social grades of the community, the importance of which will be apparent when we come to review the history of pulmonary tuberculosis in Ireland. In the next place, they contain, in addition to statistics of births, marriages, and deaths, all of which are presented on the English model, most valuable notes on the sanitary condition of the several registration districts, and inasmuch as these notes are contributed by registrars who are for the most part medical men, they possess on that account considerably increased value for preventive purposes.

The birth-rate of Ireland is stationary but still very low, amounting to no more than 23·2 per 1000 of the population. In the whole country the proportion of illegitimate to total births is 2·5 per cent., a proportion which compares favourably with that of both England and Scotland. Nevertheless the Irish provinces differ materially in this respect; for, whilst the illegitimate rate does not exceed 0·6 per cent. in Connaught, it is equal to 2·7 per cent. in Leinster and 3·3 per cent. in Ulster.

The Registrar-General reports a low rate of general mortality for the year 1907, namely 17·7 per 1000 living at all ages, which is slightly below the average for the preceding ten years. The rate was highest, 19·4 per 1000, in the province of Leinster, and lowest, 13·5 per 1000, in that of Connaught. The proportion ranged from 12·7 per 1000 in County Kerry, to 21·0 in Belfast, and 25·6 in Dublin. As a rough indication of the relation of poverty to mortality in Ireland it may be mentioned that there were registered in workhouses 10·4 per cent. of the total deaths in Connaught, 10·7 per cent. in Ulster, 16·8 per cent. in Leinster, and 19·6 per cent. in Munster.

From a well-arranged series of tables it appears that, as compared with the average in previous years, there has been in 1907 a reduction of mortality from each of the chief epidemic diseases, but that the mortality from influenza exceeds that of the previous year, and nearly equals the high average rate of the preceding decennium. It further appears that pneumonia has shown increased fatality in the year under notice, and that the deaths from tuberculosis have been equal in number to the average. Malignant disease is reported to have been more fatal than the average in 1907, but less fatal than in 1906. Taking the chief epidemic diseases separately, Sir Robert Matheson remarks on the significant reduction in the fatality of both scarlet fever and typhus fever. From the first-mentioned cause the mortality in 1907 was only one-sixth of what it had been ten years previously; and with regard to typhus fever we learn that whilst in the year 1880 there were 934 deaths from this disease the numbers had fallen to 391 in the year 1890 and to 128 in 1900, the deaths in 1907 having further fallen to 56. With the exception of the diarrhœal group the mortality from whooping-cough in 1907 exceeded that from any other epidemic disease, nevertheless the mortality in that year from whooping-cough was lower than the decennial average. Among other diseases of this group both diphtheria and enteric fever caused a lower fatality than the average in the year under notice, whilst diarrhœal diseases were considerably less destructive than usual.

An important and highly interesting section of the report is that which deals with the prevalence of cerebro-spinal fever in Ireland. Sir Robert Matheson tells us that the first recognised outbreak of this disease occurred in Dublin in the year 1846, on which occasion it lasted for four years. Again, in the period 1865–67 the disease appeared in that city, when it was known as "black death" or "malignant purpuric fever." In the year 1878, and again in 1900, the disease reappeared in Dublin, assuming epidemic form in the latter year. During the year 1907 631 deaths from cerebro-spinal fever were recorded in Ireland, of which not fewer than 495 occurred in the county borough of Belfast. From a table in the report it appears that in the large majority of the cases of this disease the fatal issue was exceedingly rapid, occurring generally within less than ten days from the commencement of illness. In Ireland, as in England, the use of the indefinite term cerebro-spinal meningitis to describe this disease has led to considerable uncertainty in the Register Office. The Registrar-General reports that in 327 cases in which cerebro-spinal meningitis appeared in the death certificates in the year under notice only 234 were finally classed, after inquiry, as cerebro-spinal fever, the greater part of the remainder having been classed as tuberculous meningitis or as other forms of tuberculosis. From these figures it is evident that a large portion of the medical practitioners in Ireland regard the terms "cerebro-spinal fever" and "cerebro-spinal meningitis" as synonymous. In the course of 1907 there were notified to the sanitary authority of Belfast 623 attacks of cerebro-spinal fever, of which 233 occurred in the March quarter, 291 in the June quarter, and 54 and 45 respectively in the September and December quarters of the year. The disease appears to have been particularly destructive to young children, not less than two-thirds of the total deaths having occurred within the first ten years of life. Whether or not exceptional measures of prevention were adopted in order to cope with the Belfast epidemic we are not informed in the report, but the disease seems to have rapidly diminished in fatality towards the end of the year.

The subject of tuberculosis, which Sir Robert Matheson

aptly terms "the bane of Irish mortality statistics," has been specially discussed in several of his recent reports. From an instructive diagram showing the relative mortality from the principal causes in Ireland we note that the column representing tuberculosis stands highest in the list. The deaths from all forms of this disease amounted to 15 per cent. of the mortality from all causes and to a rate of 2·7 per 1000 of the population. From another diagram it appears that since the year 1864 the rate of mortality from tuberculous diseases in Ireland has *increased* from 2·4 to 2·7 per 1000, whereas in England it has *decreased* in the same interval from 3·3 to 1·6 per 1000. From yet another diagram we learn that whilst in Ireland the age of highest mortality from tuberculosis is from the twenty-fifth to the thirty-fifth year, when it is fatal to 4·5 per 1000 of the population living at that age, in England, on the other hand, the age of the highest mortality is ten years later—viz., from the thirty-fifth to the forty-fifth year, when it is fatal to only 2·0 per 1000 of the population.

In Ireland, as elsewhere, tuberculous phthisis is by far the most fatal member of the tuberculous group. The deaths there attributed to this disease in 1907 accounted for a mortality at the rate of 2·02 per 1000, as compared with 1·15 in England and Wales. The sex incidence of tuberculous phthisis in the two divisions of the kingdom differs materially, for whilst in England the disease is considerably more destructive at all ages to males than to females in Ireland the sexes succumb to it in practically equal proportions. When, however, account is taken of the ages of those who die we find that from the fifteenth to the twentieth year women die faster than men from this disease, whilst at most subsequent ages the reverse holds good. We have before mentioned that the reports of the Registrar-General for Ireland have an advantage over the reports of the Registrars-General of England and Scotland in that the former alone show the variations of mortality among the several social grades of the community. The report before us contains a chart showing the behaviour of tuberculous phthisis in four "general classes" of the Irish people in the course of the last seven years. In the "general service class" the mortality is highest, 2·4 per 1000; the "artisan class" comes next with a rate of 2·1 per 1000; whilst the mortality of the "professional and independent class" is the lowest and does not exceed 0·8 per 1000. The "middle class" is the only one of the four which has shown no decrease in phthisical mortality during the last seven years.

At a later stage in the report the Registrar-General has some interesting remarks on the connexion of tuberculous phthisis with bronchitis, as well as with pleurisy and empyema. "In a certain sense," he observes, "bronchitis may, from a public health point of view, be considered as a preventable disease, and the reduction of its death-rate may be regarded as one of the indices of improvement in the social conditions under which our people are living." From a comparison of the death-rates from bronchitis in England and Ireland it appears that the mortality from that disease in the latter country exceeds that in the former by 43 per 100,000 living. The disparity is still more strongly marked if the death-rate from tuberculous disease be taken into account, for in that case there is a difference against Ireland of 142 per 100,000. In other words, if the death-rates from tuberculous disease and from bronchitis had been only the same as in England, the mean mortality from all causes together in Ireland in the decennium 1897–1906 would have stood at 16·48 per 1000, instead of at 17·90 per 1000 as it appears in the tables. Adverting to the instruction contained in the official nomenclature of the Royal College of Physicians of London to the effect that "when pleurisy is known to be tuberculous the fact should be stated," Sir Robert Matheson reports that in the year under notice 34 deaths were certified to be due to empyema without mention of probable cause. In each of these cases a query for further information was issued from his office, with the result that more than one-third of them were found to have a tuberculous origin. In the course of the last decennium inquiry was made respecting 121 deaths from empyema, the result being that as many as 53 of the patients were believed to be suffering from tuberculosis in one or another of its varieties.

With respect to the behaviour of cancer or malignant disease in Ireland, the Registrar-General's statistics are commendably complete. In the course of the ten years ending with 1900 the rate of cancer mortality increased from 46·2 per 100,000 living to 60·8. In the year 1901 it further increased to 65·1, and to 79·3 in 1906. In the year under present review, however, it fell slightly, being equal to 76·2 per 100,000 of the population. In the case of tumours stated in the medical certificates to be the cause of death, the system of inquiry from the medical certifier is adopted as in England, and as a result the death from tumour is in a large number of instances removed from that indefinite heading and referred to malignant disease. Even in the year 1907 alone not less than 75 deaths were removed from causes of a more or less doubtful nature and classed in one or another of the diseases of malignant nature. In order to ascertain the relative sex incidence of malignant disease it has been the custom to exclude the deaths of persons under the age of 35 years and to calculate the death-rates in the male and female population estimated to be living at ages above 35 years. Computed in this way the cancer death-rate was 2·02 per 1000 for men and 2·22 per 1000 for women. In the previous year the male rate in Ireland had been 2·07 per 1000 and the female rate 2·36 per 1000, the English rates for that year being 2 and 3·04 per 1000 respectively. From the above figures it would appear as though malignant disease were more disastrous to the female than to the male sex. From a table it appears that of 3338 deaths in all 1530 were those of men and 1808 those of women; but of the latter total 262 deaths were caused by cancer of the uterus and 287 by cancer of the female breast (against seven only from cancer of the male breast). If from the total female deaths the 549 deaths last mentioned be omitted, it will be seen that the male sex is considerably more liable to fatal cancer than is the female. In both sexes the organ most frequently affected by malignant disease is the stomach, 434 males and 396 females having died from affections of this organ in the year under notice. Excluding affections of the mammary and generative systems, the liver and gall-bladder are the organs coming next in frequency of attack, but of the deaths thus caused the majority occurred among women.

The Registrar-General reports with regret that in the year under notice not less than 14,299, or 18 per cent., of the deaths registered were referred to causes so imperfectly defined as to be useless for statistical purposes. The deaths under this heading comprise those referred to atrophy, old age, dropsy, tumours, abscess, hæmorrhage, sudden death, and other ill-defined or unspecified causes. In this connexion the Registrar-General makes the following appeal: "I may mention that I am now issuing suggestions to each member of the medical profession in Ireland, whose name appears in the Register, regarding certificates of causes of death, and I most earnestly ask for help from one and all, to enable me to produce the mortality statistics of Ireland in as perfect a condition as possible." Of the total deaths registered in Ireland last year not less than one-fourth part were uncertified, as compared with 2·3 per cent. for Scotland and 1·5 per cent. for England. Sir Robert Matheson attributes this large proportion of uncertified deaths to the custom which prevails in some of the rural parts of Ireland of not seeking medical advice, especially for the aged. The very large area of most of the dispensary districts also involves special geographical difficulties in procuring timely medical help in the hour of sickness. In these circumstances the Registrar-General has found it necessary from time to time to issue circulars to all medical registrars impressing upon them the importance of certifying causes of death in the case of their own patients. The Irish Local Government Board has also been requested to exercise its influence in this matter on the dispensary medical officers who act under its direction. Although the proportion of uncertified deaths is still very high it is satisfactory to note that it is steadily though slowly falling.

We heartily congratulate Sir Robert Matheson on the general excellence of the forty-fourth annual report and for the promptness with which it has been issued; and we are sure that the medical profession in Ireland will appreciate the graceful terms in which the Registrar-General acknowledges the services of Dr. Ninian McIntire Falkiner in its production.

HOSPITAL SATURDAY AT NEWTON ABBOT (DEVON).—£274 were collected recently in Newton Abbot for the Hospital Saturday fund. This is £54 in excess of any previous Hospital Saturday collection.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 26, 1908.

The Present Condition of Pharmacy.

PHARMACY still forms one of the subjects of the ordinary medical curriculum and it is obvious that a knowledge of the various mineral and vegetable preparations which are used as drugs is essential for every practitioner of medicine. At the present time, however, the same intimate knowledge of pharmacy is not required as was the case in past generations of medical men. The evolution of the pharmacist has gradually introduced a new element into medical practice, many practitioners confining themselves to writing prescriptions and leaving the actual compounding of the ingredients to the pharmacist or, to use a more familiar term, the druggist. At the meeting of the British Pharmaceutical Conference recently held in Aberdeen the President, Mr. ROBERT WRIGHT, delivered an interesting address on "Pharmacy—its Rise, Province, and Present Condition," in which he considered in detail many points which are constantly arising in connexion with the preparation and the compounding of drugs, dealing, however, with the ethical side and not with the scientific.

Having sketched in brief outline the rise of pharmacy, Mr. WRIGHT proceeded to make a few remarks upon its province. He correctly maintained that pharmacy included within its range the provision and supplying to the public of everything capable of employment for the relief or cure of any ailment or disease to which human beings are subject. As regards drugs, this includes their collection and the investigation of their botanical character, their chemical and physical properties, and their composition; also their elaboration and exhibition in the form of galenical preparations of approved type, and their distribution to the public, either directly or indirectly. This consideration at once raises the much disputed question of the relationship which should exist between the medical practitioner and the druggist. Mr. WRIGHT stated the ideal condition in a few words: "The proper sphere of medicine lies in the diagnosis of disease and its treatment, including the prescribing of remedies; that of pharmacy in the compounding of drugs and the dispensing of medicines." Could this principle be always and everywhere carried out in practice no difficulties would arise; but Mr. WRIGHT recognises the complexity of the situation and in his address gave his opinion freely on the subject. With most of his remarks we are in accord. He stated the case for the pharmacist with fairness and exactness and uttered a note of warning to those of his colleagues who from "mercenary motives ..... should be tempted to transgress the laws of prudence and common sense, and to administer remedies in cases with which only the trained practitioner should deal." He then went on to remark: "We claim that the counter-prescribing of simple remedies for simple ailments is quite in harmony with the general fitness of things, and an educated and conscientious pharmacist, knowing by experience the difficulties often met with in diagnosing even 'simple' ailments, will in any case of doubt at once draw the line and refuse to prescribe." The important point in this dictum is that every pharmacist should clearly know where to "draw the line" and there is every temptation to extend the limit of counter-prescribing rather than to lessen it. To take an example. It is a daily event for a customer to enter a druggist's shop and to ask for a remedy against constipation. A pill or draught is given but unless some discrimination is used serious results may follow. It would be impossible for the druggist to diagnose between simple constipation, intestinal obstruction in any form, or ambulatory enteric fever, and the careless use of purgatives might thus prove a great danger. We agree with Mr. WRIGHT that there is another side to the question—namely, the dispensing of drugs by medical practitioners. But we venture to suggest that he puts the case too strongly when he speaks about "the doctor who for complaints which he is supposed to be able to diagnose correctly administers drugs of the proper methods of exhibiting which he is totally, or almost totally, ignorant." We regret that he should have made such a condemnation in an address which was otherwise so moderately expressed. The medical student is now compelled to attend lectures on materia medica and to go through a course of instruction in pharmacy which gives him a fair knowledge of the subject. This is essential, for although, as has been ably argued in our columns,[1] it would be advantageous to the medical profession if medical men prescribed their medicine, leaving the making up of the formulæ to the dispensing chemist, yet such a course is not practicable. There are many neighbourhoods which are too poor and too sparsely populated to support a dispensing chemist and hence the practitioners residing in that district are obliged to dispense their own drugs.

Mr. WRIGHT expressed himself in no doubtful terms in regard to the sale of patent or quack medicines. He quoted figures which amply proved that notwithstanding the wide diffusion of knowledge, the spread of education, and the raising of the standard of intelligence among the people, the appeal of the quack and the charlatan to the credulity of the public meets with a readier response than ever. We have again and again protested against the exploiting of such preparations by the lay press but with very little success. Mr. WRIGHT was pessimistic in regard to the part which the pharmacist could play in helping to mitigate the evil, for he remarked: "What the public demands in the shape of medicine we ought, I think, unquestionably to supply." We doubt the propriety of this remark; nevertheless, he is probably correct in thinking that the dispensing chemist can do but little and that the real and only effective remedy lies with the legislature, and he indicated the direction which he considered such legislation should take. He suggested that the cost of the patent

[1] THE LANCET, April 1st, 1905, p. 878.

medicine licence should be raised very considerably, a proposition which we heartily endorse. He further proposed that a board of control, consisting largely of recognised authorities in the different branches of medicine, should be constituted, to which it should be made compulsory for the composition of every secret remedy to be submitted for registration before permission could be given for its public advertisement or the imprimatur of the Government stamp. This proposal, however, would have to be considered carefully, for we doubt both its advisability and practicability. We have from time to time published analyses of many of the quack medicines which are on the market and have demonstrated how useless they are, but a certain section of the public appears to enjoy being victimised and nothing short of stringent legislation will diminish the profits of the patent medicine vendor. Mr. WRIGHT'S remarks on the various matters connected with pharmacy are well worth careful consideration; the pharmacists working loyally with the members of the medical profession, as he urged them to do, can perform inestimable service to the public. There are much room and need for pharmaceutical research but this can only be successfully accomplished if those engaged in that undertaking are willing to give themselves unselfishly to the work and to labour diligently for the good of the community.

The Sanitary Defence of the Hedjaz Railway.

THE present situation in the East, whether Near East, Middle East, or Far East, is one of absorbing interest. No publicist, be his sphere of activity never so specialised, can stand by unconcerned, unmoved by the spectacle of the dramatic series of events that have unrolled themselves in the last few years in one Oriental country after another. The volcanic upheaval of Japan as a first-class "European" power, the domestic troubles in the vast Russian empire, the "unrest" in India and in Egypt, the reign of anarchy in Persia—these events have succeeded each other with almost breathless rapidity. And now, most recent in this closely linked chain, has come the peaceful revolution in Turkey, where, after 30 years of Palace rule, the people have forced their ruler to grant them liberty and a constitution, have put to ignominious flight the Palace clique, and are now rejoicing in their newly acquired freedom. No one can withhold his meed of admiration at the manner in which this tremendous change has been brought about by the Turkish people themselves and at the wonderful restraint and self-control which they have shown in circumstances such as, in other countries in the past, have too often led to anarchy and bloodshed. That the occurrences briefly enumerated above, which have marked the recent history of so many eastern countries, are closely inter-connected, each with the others, it is impossible not to believe; and they afford abundant material for the philosopher anxious to find in them some guiding and connecting principle, and endeavouring to draw from them conclusions that may help to raise, be it by ever so little, the veil that hides the near future. Is the East really waking from its age-long sleep? Are we on the eve of great secular events, where East and West shall at last "meet"? Shall that meeting take the form of a friendly rivalry and a treading side by side the paths marked out by "western" civilisation, or will it end in the shock of arms and the ghastly carnage of a modern Armageddon? Or, finally, will another and a different form of civilisation be ultimately evolved, face to face with which that particular form of it which we call "western" may find it hard to hold its own and may have to yield and to modify itself beyond recognition?

Almost simultaneously with the granting of the constitution in Turkey the railway which unites Damascus with Medina has been completed and formally opened. This alone would at any other time have appealed irresistibly to the imagination and have justified speculations almost as far-reaching as those in which we have just ventured to indulge. Coming as it does at this particular moment it acquires an added significance and appeals with increased force to the imagination of all thinking people. In this brief column, however, we cannot follow further the fascinating lines of speculative thought which such an event as this inevitably opens up. The completion of the Hedjaz railway may, indeed, be considered from so many different aspects that it could well furnish themes for innumerable articles, but we must content ourselves here with considering it from one aspect only—the influence which the line mus inevitably have on the spread of disease and the means by which this new danger will have to be met. We publis to-day the first of a short series of articles on this subject which has been sent to us by the British Delegate on the Constantinople Board of Health. The writer has recently returned from a journey down the Hedjaz Railway as far as Medaini-Salih, only some 180 miles north of Medina. As perhaps the first English medical man who has ever visited those regions (to which, indeed, few Europeans of any kind have hitherto penetrated) his articles offer a special interest. The journey was accomplished as member of a Commission sent by the Constantinople Board of Health, with the general mandate to study on the spot the sanitary defence of the line, and the special mandate to select the best site for a lazaret, in which pilgrims returning from Mecca and Medina will undergo disinfection, and if necessary quarantine, before reaching Damascus. The results of the Commission's labours are set forth at length in the articles in question. Tebuk, a place about half-way between Damascus and Medina, but rather nearer the latter, has been chosen as the site for the quarantine station; and a series of definite proposals have been made by the Commission for the sanitary defence of the line, the execution of which is now seriously occupying the international sanitary board above referred to. The question of "ways and means" is also, we gather, being considere in the proper quarters and will sooner or later form the subject of a new agreement between the Porte and the Powers interested.

To the measures proposed by the Commission in question we may perhaps refer again and in more detail in a later issue. We would only say now that a thorough scheme of defence of this new channel of communication is of first-rate importance in the interests of the public health of all

Europe. The great protective barrier formed by the 800 miles of barren desert between Medina and Damascus has now been annihilated, and a four days' journey by train has been substituted for a six weeks' march on camel-back or on foot. The greatly increased danger of the carriage of cholera or other disease by returning pilgrims is too obvious to need dwelling on at length. And at the present moment the danger is no imaginary one. Cholera is spreading rapidly and widely in Russia, as our columns have recently shown, and it is scarcely to be hoped that the coming Haj will escape infection. The measures to be applied this year on the Hedjaz railway are, we gather, to be of an improvised character, though they will show a great advance on those applied last year. We are only expressing an opinion very widely held in saying that it is of real necessity that the permanent sanitary defence of the line should be provided for without too long a delay, and that the measures of defence should be adequate to meet the risk and should be applied on a scale proportioned to the number of pilgrims who may be expected to use this new and convenient mode of returning from the Holy Cities of Islam.

The Nature of Menstruation.

IN all ages—ancient, mediæval, and modern—the process of menstruation has been regarded with much interest by students of nature, whether physicians or philosophers. Among the early Greek writers it was thought that the menses represented the seed of the woman and that the union of the female seed with that of the male was necessary for conception to occur. The saying usually attributed to ARISTOTLE, "The blood of the menses is the marble, the semen is the sculptor, and the fœtus is the statue," well expresses the views as to the importance of these two substances held by the thinkers of his day. It is not surprising, when such ideas as to the meaning of generation were current, that various explanations as to the origin of monsters should have been based upon the possibility of their being due to some alteration in the character or condition of one or other of the two seeds. From this it was but a short step to the conception that intercourse with a menstruating woman was likely to give rise to various forms of monsters, and such an idea was no doubt fostered by the various rules and prohibitives laid down in the Old Testament regarding coitus during, or immediately after the cessation of, the menses. As BALLANTYNE points out, in the non-canonical book of Esdras the following passage occurs: "Menstruous women shall bring forth monsters"; and according to the Talmud the infant conceived during the period of impurity was regarded as certain to be an epileptic, a drunkard, a cretin, or insane. AMBROSE PARÉ, too, considered intercourse between parents at such times as they ought to abstain by the command of GOD and the Church to be one of the causes of monsters. Not only did the old writers think that the menses played the chief part in the production of monstrous births but they also taught that the menstruating woman was unclean and to be shunned; thus PLINY tells us: "On the approach of a woman in this state, must will become sour, seeds which are touched by her will become sterile, grass wither away, garden plants are parched up, and the fruit will fall from the tree beneath which she sits." He also says that menstruating women in Cappadocia were made to perambulate the fields to preserve the vegetation from worms and caterpillars.

Such curious notions as these with regard to the nature of the menses prevailed until the latter part of the seventeenth century, when the researches of HARVEY, DE GRAAF, and LUDWIG HAMM of Dantzig, who first discovered living spermatozoa, threw a new light on the real nature of generation and the structures concerned therein. It was still, however, thought that the discharge of the menses formed a monthly cleansing process and many customs founded upon this view, such as the isolation of menstruating women, can be traced among the inhabitants of all parts of the world, even up to quite recent times. Since the discovery of the process of ovulation the theory that there must be some relation between the discharge of an ovum from the ovary and the occurrence of menstruation has always been held; and one of the most interesting problems connected with pregnancy is the relation of these two processes to one another, whether we consider merely the time of their occurrence or their possible causal relationship. The researches of LEOPOLD and others have proved beyond doubt that ovulation can occur without menstruation and menstruation without ovulation; at the same time there is an increasing tendency amongst most of the writers who have made a special study of this subject to believe that there is some relationship between them—that the occurrence of ovulation favours the onset of menstruation or *vice versâ*. The fact that pregnancy puts a stop to the appearance of the menses leads naturally to the hypothesis that if impregnation fails to occur the ovum is cast off with the mucous membrane of the uterus and that menstruation is therefore an abortion of an unfertilised ovum. Of late years most authorities are inclined to accept the views so ably put forward by HEAPE, and to regard the menstrual cycle in man and monkeys as homologous with the œstrus cycle of the lower mammals, menstruation being represented by the pro-œstrus, while the period of œstrus or rut is thought to correspond in the human female to the days immediately following the cessation of menstruation, when as a rule sexual desire is at a maximum. It may well be that at the present time menstruation should be regarded as equivalent to the pro-œstrus stage in animals, but since there are many women in whom the sexual feelings are most highly developed during and not after menstruation, is it not possible that in the course of many generations the teaching that intercourse at this period was harmful and the fact that it was interdicted by the Church may have led to an involuntary suppression of her natural feelings on the part of the modest woman, and so to the gradual development of the idea that menstruation and rut are not in reality the same thing?

In their recent work on an early human ovum[1] TEACHER and BRYCE have propounded a new and most interesting

[1] See p. 941 of the present issue of THE LANCET.

hypothesis as to the nature of menstruation. They base their conclusions on the study of a specimen which came under their own notice, and on the descriptions of a series of young ova recorded in the literature, the ages of which they have determined from the age and degree of development of the early ovum described by themselves as to which very accurate data are forthcoming. They consider that the menstrual decidua is not in the old sense of the words a preparation for the reception of an ovum, that it does not represent an abortion of an unfertilised ovum, and that menstruation does not necessarily coincide with ovulation. They regard it as a cyclical process which provides for the maintenance of the endometrium in a suitable condition for the production of the decidua of pregnancy. The observations of GRAF VON SPEE and others on the mouse and guinea-pig have demonstrated that the endometrium does not show the slightest trace of alteration from the non-pregnant state until its epithelium has disappeared and the ovum has begun to attack the deeper tissues in the process of imbedding itself, when decidual development rapidly follows. The imbedding of the ovum and the development of the decidua may be concluded in all probability to take place in the same manner in the human subject, and the uterine mucous membrane may be considered as capable of producing a decidua of conservation whenever its integrity is threatened by the young ovum. The observations of TEACHER and BRYCE tend to show that the imbedding of the ovum can take place at any time during the month, even during the quiescent period of the endometrium, and their view therefore that by the recurrence of the menstrual cycle the uterine mucous membrane is maintained in a condition of immaturity most favourable for the development of a decidua seems eminently rational; it is certainly borne out by the arguments which they put forward. At the same time they believe that the most favourable circumstances for successful impregnation are the occurrence of ovulation about the period of menstruation and of insemination shortly before or after the period of discharge.

Annotations.

"Ne quid nimis."

THE MOTOR PROBLEM: A TIMELY CIRCULAR.

THE Local Government Board has recently issued an important circular to county councils and town councils of boroughs dealing with the regulation of motor traffic, in which the grave nuisances and abuses which have resulted from its development are fairly faced. The object of the circular is to remind local authorities of the powers which they already possess to deal with reckless driving under Sections 1, 8, 9, and 11 of the Motor-car Act of 1903. The first of these is the most important, for it provides that—

> If any person drives a motor-car on a public highway recklessly or negligently or at a speed or in a manner which is dangerous to the public, having regard to all the circumstances of the case, including the nature, condition, and use of the highway and to the amount of traffic which actually is at the time or which might reasonably be expected to be on the highway, that person shall be guilty of an offence under the Act. Offences under this section are by Section 11 punishable on summary conviction by a fine not exceeding £20, or in the case of a second or subsequent conviction by a fine not exceeding £50, or in the discretion of the court to imprisonment for a period not exceeding three months.
>
> Any police constable may apprehend, without warrant, the driver of any car who commits an offence under Section 1 within his view, if he refuses to give his name and address or produce his licence on demand, or if the motor-car does not bear the marks of identification.

The circular points out that this clause, which bases the consideration of each case upon its own special circumstances, should afford a check upon its own reckless driving sufficient to obviate the necessity of further legislation in the direction of a drastic speed limit, the disadvantages of which are fully recognised. With regard to the present regulation limiting motor-cars on any public highway to a speed of 20 miles an hour and in certain localities, the authorities of which have made a special application to the Local Government Board, to a speed of 10 miles an hour, it is clearly stated that even where the lower speed limit is not imposed there are innumerable places where the speed should be much less than 20 miles an hour. The Board is anxious that local authorities should enforce this principle rather by applying their powers under the section which we have quoted than by extending the operation of the 10-mile limit, but it acknowledges itself ready to give prompt consideration to applications for powers to make such a local order where circumstances justify it. The circular very rightly strongly discountenances anything in the nature of racing on public roads by motor vehicles. It further observes that "whilst motorists should be required to obey the law it is of importance that the road authorities should use every effort to diminish the risk of accidents from a form of traffic the existence of which cannot be ignored." It suggests the widening of streets, the rounding of corners, the avoiding of central road-posts for tramways, the pruning of hedges near crossways, and the erection of danger signals by local authorities whenever a fair opportunity presents itself, and that the prevention of dust by watering and other treatment, "to mitigate what is undoubtedly a serious cause of complaint," should be systematically undertaken. The gist of the document may be summed up by saying that the Board considers that the steady and systematic enforcement of present powers would largely prevent the wanton abuse of the highway by inconsiderate and reckless drivers. We believe that certain societies interested in the welfare of motorists are using their endeavours to purge their ranks of that class which has brought discredit and even execration upon a vehicle which must inevitably become the chief form of road conveyance of the future. Motor-cars can be, and often are, driven with consideration and even with courtesy, but the remembrance of six well-mannered drivers is swept out of the mind of a pedestrian furious at the insults of a "road-hog" who has charged down upon him in the furious exercise of all the abominable customs of his tribe. Such persons must be repressed in the interests both of the public and of decent drivers, and we trust that local authorities will be stimulated by this timely circular to use the full powers to that end with which they are invested. The dust question presents a harder problem. Of its urgency none can doubt who use any country road upon a rainless day. It does not seem that any material help to its solution has come from various suction devices affixed to the cars. If the Local Government Board is unable to make grants for the treatment of roads it seems that the local authorities must see to it at their own expense, in the interest both of the health and temper of their residents and visitors.

"THE HOSPITAL ASSISTANT."

THE above is the title of a periodical published at Kolhapur (India) and devoted to the interests of that numerous, intelligent, and deserving body of men in the employment of the Government of India who are known officially as hospital assistants. Hitherto the *Hospital Assistant*, to which we have already directed attention,[1] has been issued monthly but, being literally "a one-man journal," when its editor unfortunately fell sick there

[1] THE LANCET, August 3rd, 1907, p. 309.

was nobody to take his place. The number for May consequently failed to appear at the appointed time, but in due course the editor recovered and being still full of zeal he has now sent out a double number for May and June, 1908, which makes its appearance clad in a brilliant green cover. As may be supposed, the little journal produced under such elementary conditions does not attempt to enter deeply into the more abstruse topics of medicine. On the contrary its object is practical rather than theoretical. As the editor, who is himself a hospital assistant, puts it, the aims of his journal are twofold: to ameliorate the condition of his class and to stimulate their desire for knowledge. Medical papers are sufficiently abundant in India, but many of them consist of little else than advertisements, of a more or less objectionable description, and reproductions of articles from American sources. The *Hospital Assistant*, however, is not one of these. On the contrary, it contains a fair proportion of original matter, while its "Department of Current Medical Literature" is recruited for the most part from the European medical press. Hospital assistants, according to their own showing, are not very well treated by the Government which they serve so faithfully. They are silent sufferers, they say, who make no fuss over their wrongs, and the consequence is that they still occupy the same position as regards pay and other advantages which they did 25 years ago. Educational and professional requirements are much higher now than they used to be, but there has been no corresponding increase of remuneration for medical subordinates or improvement in their status. Thousands of human lives are intrusted to the care of hospital assistants all over India, but they remain the only class of subordinate officials who are miserably underpaid and shabbily treated as well in the matter of leave, transfers, allowances, and pensions. After a four years' course of study and the successful surmounting of several searching examinations a hospital assistant receives a starting pay of Rs. 25 per month; nor is that miserable pittance increased until he has spent the better part of his life in a heartbreaking endeavour to keep up a respectable appearance and, it may be, to support a wife and children with totally inadequate means. The foregoing recital of grievances is, of course, an *ex parte* statement, but it seems to be clear that in some respects, and especially as regards pay, the hospital assistants of India are not very well treated by their masters. The cost of living has gone up enormously of late years for all classes, and it would be only just and reasonable to treat this efficient and indispensable body of men with the same liberality that has been accorded to other public servants.

FOREST FIRES.

THE "irony of Providence" has seldom been more vividly in evidence than in these days, when, coincidently with a quickened sense of the need of "re-afforestation" to retrieve the damage wrought by reckless tree-felling, we read of forest fires in both the Atlantic and the Pacific territories involving New England and British America in desolation and ruin. In the Old World the phenomenon has equally been exemplified, though on a scale less widespread and appalling. The centres of antique civilisation—Greece and Italy—have long been the victims of their own improvidence in consuming their timber without concurrent and compensating tree-planting, having drawn down on themselves the Nemesis of injured Nature, whose "balance" they have disturbed by reducing the umbrageous hillsides to prairie, accelerating evaporation by the destruction of its detaining medium, and so incurring the torrential downpour of autumn, the overflow of rivers, and the consequent drought which for nine months of the year converts the watercourses into gravel-pits. So feelingly has the Italian Legislature been impressed with the results of this practice that its official reports and Parliamentary discussions on the theme constitute quite a storehouse of information and suggestion for other nationalities on whom the "retributive justice" of the sylvan deity has fallen less heavily. Rich in illustrations of the causal nexus between short-lived inundation and prolonged drought, these reports and debates are replete with warning as to the changes, meteorological and climatic, which have affected the peninsula disastrously within the memory of men now living. No medium is more sensitive, more elastic, than the atmosphere; none responds more readily to altered conditions in the earth's crust, whether these be due to the non-reclamation of waste-lands or to the wholesale destruction of forest growth. The Padre Denza's demonstration of the origin of the sirocco in the Sahara is an example of the former; the change for the worse in the climate of Italy, landward or littoral, is a proof of the latter. Italian meteorologists, indeed, extending their studies beyond their own frontier, see with dismay the annually increasing violence of the cyclone, caused, as they hold this to be, by the steady "clearing" of the earth's crust in Transatlantic latitudes, the accelerated evaporation, and the genesis of those "vertiginous storms" which combine to form the "nubifragi" (water-spouts) such as in Tuscany three months ago dealt destruction to the vineyards and olive-groves. It is even proposed, in these days of international deliberation, to convene a congress of the Powers with a view to discussing and devising some combined effort to control that denudation of the terrestrial surface which affects the interests and the well-being of all.

"Tua res agitur cum proximus ardet
Ucalegon,"

and when the Ucalegontes of the world are realising that their neighbour's "forest fires" menace them individually and collectively, it is high time that common action should be taken to minimise and eventually to remove the "conditions precedent" of the danger thus courted and caused.

SPONTANEOUS EPIPLOPEXY.

EPIPLOPEXY, the production of adhesions between the great omentum and the abdominal wall, is an operation which was devised about 20 years ago by Talma of Utrecht in order to relieve the portal congestion in cases of cirrhosis of the liver attended with ascites by establishing a collateral circulation. In about half the cases the ascites has been cured or relieved. In one case recorded, reported by M. Le Gendre and M. Deglos to the Société Médicale des Hôpitaux of Paris in 1906, on exploratory laparotomy three years after the operation a large venous plexus was found between the abdominal wall and the great omentum which insured a considerable outlet from the portal circulation.[1] At a meeting of the society on July 17th last M. A. Siredey, M. Henri Lemaire, and M. J. Deroye reported a case of cirrhosis of the liver in which the ascites almost disappeared in consequence of the spontaneous establishment of such a collateral circulation. A man, aged 41 years, was admitted into hospital on April 13th, 1908, suffering from right pleural effusion. Paracentesis yielded a litre of pus containing numerous streptococci. It was noticed that the abdominal wall and thorax were covered with large veins running longitudinally and communicating with the epigastric veins below and the axillary and subclavicular veins above. At the level of attachment of the diaphragm were numerous little red vessels like those seen on the surface of a varicose leg. The abdomen was a little flaccid and there were no signs of

[1] THE LANCET, Jan. 19th, 1907, p. 180.

ascites. The liver was large and hard and the spleen was slightly enlarged. The patient's medical attendant supplied the following history. He first saw the patient on July 20th, 1906, when he found considerable ascites and a slightly developed collateral circulation. The patient admitted that he took two or three litres of wine daily. Paracentesis yielded 12 litres of citrine fluid. An absolute milk diet and iodide of sodium were prescribed, but the ascites recurred and repeated paracentesis was necessary. Up to January, 1907, this was performed nine times; the quantity of fluid obtained varied from 13 to 18 litres. After that the fluid was more slowly reproduced, paracentesis was performed at longer intervals, and the quantity of fluid obtained diminished. At the same time the subcutaneous abdominal veins gradually enlarged. At the period when the ascites was great an umbilical hernia appeared, but when the ascites diminished the hernia nevertheless continued to increase. On May 28th the hernia became strangulated. The sac was opened and the hernia was reduced. The patient completely recovered his health. When seen again, in November, 1907, the liver was large and the subcutaneous abdominal veins were still more developed but there was no trace of ascites. He returned to work but resumed his intemperate habits. In March, 1908, he had acute bronchitis which was followed by the pleural effusion mentioned above. The operation for empyema was performed but the patient was in an exhausted and infected condition and succumbed on April 18th. At the necropsy the veins forming the collateral circulation in the abdominal wall were found for the most part to be larger than the radial artery. They almost all seemed to converge to two large varicose trunks which originated in the epigastric region and ran obliquely upwards to terminate in the first part of the axillary veins. In the sheaths of the recti muscles were numerous orifices from which large veins emerged. A huge vein ran from the suspensory ligament of the liver and emptied into the left side of the subcutaneous plexus. The posterior wall of the sheaths of the recti also showed numerous orifices for the passage of veins which traversed the muscles to the subcutaneous plexus. The omentum was adherent to the abdominal wall for a considerable extent. This union was intimate in the umbilical region above and below the cicatrix of the herniotomy, for a surface 15 centimetres broad and 12 centimetres long. The omentum contained numerous varicose veins which were found to be those which traversed the recti muscles. There was a much developed subphrenic venous plexus which received veins from the phrenico-colic and phrenico-splenic ligaments and œsophagus, and which terminated in two large trunks opening into the vena cava. At the same meeting M. Chauffard also related two cases of spontaneous epiplopexy which he described as a "physiological justification" of Talma's operation.

SPORT AND MEDICATION.

THE "doping" of racehorses, a subject discussed in these columns in July, 1901, is said to be better understood in America than in England. It is regarded here as dishonourable and is indeed a criminal offence, but it is sufficiently known among us to have inspired a sporting author to write fully on the subject. Mr. Nathaniel Gubbins's book, which appeared some seven years ago, described two kinds of "dopes," according to one of which a horse is drugged with opiates or even purgatives to lose a race, and according to another is so treated sometimes with subcutaneous injections of from 10 to 12 grains of cocaine as to run at an abnormally accelerated pace. This latter kind of "dope" is perhaps the descendant of an ancient theory, according to which all animals connected with sport were liable to be medicated in order to fit them for the better performance of their duties. Hawks and falcons, for instance, were anciently the victims of ferocious drugging from the effects of which they frequently fell ill or died. Sir Thomas Browne, in his "Tract of Hawks and Falconry, Ancient and Modern," gives curious details of the treatment of these birds. Down to his times, if not later, it seems to have been a common practice to bleed them or treat them to vapour baths. To improve their sight they were seared "under the inward angle of the eye," and pepper and nettles were administered in order to enhance the hunting instinct, just as Spanish bulls are given hot mashes or otherwise excited before a bull-fight, and as cocks, where cock-fighting is prevalent, are specially prepared for the fray. A hawk or an owl to Sir Thomas Browne was evidently a *corpus vile* on which to make experiments in medication at large. For scab, he says, I have safely given six or eight grains of *mercurius dulcis* unto kestrils and owls, as also crude and current quicksilver, as well as pellets of silver and lead for the cure of worms. Quite recently it was proposed that athletes should be "doped" with oxygen before running or diving, and during the latest attempt to swim the Channel the performer at the end of his great effort is reported to have been receiving administrations of oxygen every quarter of an hour. The propriety of this sort of thing has been much discussed and we believe that the feeling of English sportsmen is hostile to it. An athletic feat achieved under medication cannot be compared, at any rate, with one performed without such accessories. It is a question, however, whether in certain contingencies "doping" of a kind is not permissible. An Englishman in India, for instance, who finds that his syce has sponged a horse's nose with opiated water in order to enhance the creature's endurance during a long journey is confronted with a very nice question in ethics. Sir Thomas Browne would have commended the syce.

THE EXERCISING OF INSANE PATIENTS.

PUBLIC attention has of late been drawn to an unfortunate state of affairs at Epsom and one of which the inhabitants of that pleasant town bitterly complain. During the last few years it has so happened that the vicinity of Epsom has afforded sites which, coming into the market, have been acquired and utilised by the London County Council for the purpose of the erection of the enormous asylums made necessary by the large increase in the insane population which has been one of the most perturbing features of the last few decades. We have always regretted this massing of insane patients in a comparatively small area and felt no surprise when Lord Rosebery in a letter to the *Times*, not long since, uttered a protest against the erection of yet another huge institution. The spectacle of suffering is never an agreeable one, and we have little doubt that if the patients in any general hospital were turned out for an occasional airing in large numbers we should hear that the spectacle was a ghastly one and calculated to scare the women and children of the neighbourhood. But in the case of mental disorder there is in addition to the painful spectacle of disease the added horror which attaches itself in the popular imagination to the idea of the "raving lunatic" and his supposed dangerous character. That in fact any member of a "walking party" is a dangerous lunatic we find it impossible to believe. No superintendent, however anxious to satisfy the proclivities of the Commissioners in Lunacy for a minimum of restraint, is in the least likely to permit a patient who is addicted to homicide or to assault and battery to go out with a walking party or to be without the strictest surveillance even while in the asylum itself. But apart from the idea of possible danger to the public, there

appears to be evidence that the selection of patients who are allowed out is not always a judicious one. There are allegations of acts of indecency and of drunkenness on the part of patients which, if true, constitute a gross scandal. There is, we believe, no therapeutic justification for allowing abroad a patient who has so little control over himself that he is likely to behave with impropriety or even with marked eccentricity. Neither can we see any advantage which is likely to accrue to the advanced dement in a walk beyond the asylum grounds. Only too often such a patient is an object of unseemly derision on the part of the young and thoughtless from which he should be protected rather than to which he should be exposed. That there do exist classes of patients who benefit enormously by occasional and, indeed, sometimes by frequent outings we emphatically affirm, but it is fortunate that the patients likely to be so benefited are the very last to be mistaken by the public for anything but sane, or, at the worst, mildly eccentric. We are of opinion that a large part of the present difficulty arises from the undermanning of the asylums with medical officers. The enormous number of patients renders a proper medical supervision out of the question, and that treatment should be applied to batches of patients without consideration of the individual requirements of the case is, of course, radically improper. But we fear that the day is still far off when the medical officer of an asylum will no longer be regarded as a mere keeper of lunatics and will be recognised as practising in one of the very highest branches of our profession. Perhaps, too, our system would be none the worse if the official guardians of the insane, the Commissioners in Lunacy, placed a little more confidence in the medical officers. To the requirements of the Commissioners this despatch of large unassorted parties of patients on walking parties is a direct response, even, as we have recently pointed out, as the neglect of certain therapeutic measures is seemingly due to a dislike on their part of finding patients in bed. We fear that so far as Epsom is concerned the initial error of placing so many large asylums in close contiguity cannot be rectified but we have little doubt that the more glaring nuisances may be abated.

THE EPIDEMIC OF CHOLERA IN RUSSIA.

RECENT reports from Russia do not indicate a diminution in the epidemic of cholera but it is not at present showing any likelihood of attaining the terrible proportions of the epidemic which ravaged that unhappy country in 1902. The medical authorities in St. Petersburg appear to be making strenuous efforts to cope with the situation in the face of a lamentable state of sanitary deficiency in the poorer quarters of that city. So far as regards London we understand that the London County Council is taking measures similar to those which proved quite effective when cholera broke out on the waterways of the Oder and Vistula in 1905. The main feature is a coöperation of the Metropolitan Asylums Board with the London County Council, the former body undertaking to receive persons suffering from actual or suspected cholera, and the latter to provide accommodation when necessary for persons who may have been in contact with cases of the disease. Great attention is being paid by the Council to the verification of addresses given by immigrants, whose movements are traced so long as they remain in London, the owners of the premises where they lodge being responsible under penalty for the notification of any change in their addresses. The medical officers of health in the various metropolitan and other boroughs in which they are lodging are kept informed of such movements. These precautions were satisfactory to the Local Government Board in 1905 and were fully justified by their success. There is scarcely need for the Board to impress the necessity of close watchfulness upon the various port authorities throughout the kingdom, for their constant and great responsibility as the country's first line of defence against disease becomes especially apparent at times such as the present. We trust that better reports from Russia may speedily arrive to remove finally any public anxiety as to the chances of cholera invading Great Britain. Our Paris correspondent sends an interesting account of the measures which are being taken in France to safeguard that country against the entry of the disease.

SOME AMERICAN DRUGS.

MANY plants are used for medicinal purposes in the United States which have not yet been used to any great extent in other countries. Owing to the fact that many drugs of American origin are being largely employed in Europe, notably hydrastis, senega, gelsemium, podophyllum, and euonymus, to name only a few examples, it is of interest to refer to some popular drugs indigenous to America which are described by Miss Alice Henkel in Bulletin No. 107, Bureau of Plant Industry of the United States Department of Agriculture. Wild turnip, arisæma triphyllum, is an acrid plant, of which the corm is used as a stimulant, diaphoretic, expectorant, and irritant. It was official in the United States Pharmacopœia from 1820 to 1870. The root of an evil-smelling herb known as skunk cabbage, spathyema fœtida, was official in the United States Pharmacopœia from 1820 to 1880. It has an objectionably fœtid odour and a sharp acrid taste and is used in affections of the respiratory organs, and in nervous disorders, rheumatism, and dropsy. Skunk cabbage loses its odour and acridity with age and should not be kept longer than a year. Beth root, trillium erectum, has a slight odour and when chewed causes a flow of saliva. The taste is at first sweetish and astringent and afterwards bitter and acrid. It was much esteemed among the Indians and early settlers. It is now used for its astringent, tonic, alterative, and expectorant properties. The root of lady's slipper, cypripedium pubescens, a beautiful member of the orchid family, is official in the United States Pharmacopœia. It is used as an antispasmodic and nerve tonic for the same purposes as valerian. Another orchid, crawley root, corallorhiza odontorhiza, is used as a sedative and in febrile conditions. It is said to be an effective diaphoretic. Canada snake root, ascarum canadense, which is used as an aromatic, diaphoretic, and carminative, was official in the United States Pharmacopœia until 1880. The yellow dock, rumex crispus, is largely used with other species of dock for "purifying the blood" and in the treatment of skin diseases. The root of pokeweed, phytolacca decandra, is used as an alterative, also to relieve pain and allay inflammation. It has purgative and emetic properties. The fully matured berries are also employed in medicine. The roots and leaves of soapwort, saponaria officinalis, have tonic, alterative, and diaphoretic properties. The Indians and early settlers esteemed the little root of goldthread, coptis trifolia, as a remedy for ulcerated mouth, and it is still used as a mouthwash or gargle and as a bitter tonic. It was official in the United States Pharmacopœia from 1820 to 1880. Oregon grape-root, berberis aquifolium, has long been used as a tonic and alterative and is now official in the United States Pharmacopœia. Blue cobosh, caulophyllum thalictroides, is used as a demulcent, antispasmodic, emmenagogue, and diuretic. It was official in the United States Pharmacopœia for 1890. Twinleaf, Jeffersonia diphylla, is used as a diuretic, alterative, antispasmodic, and diaphoretic. Large doses are said to be emetic and smaller doses tonic and expectorant. The root of Canada moonseed, menispermum canadense, was

official until 1890 and is still used as a tonic, alterative, and diuretic. Blood-root, sanguinaria canadensis, is tonic, alterative, stimulant, and emetic, and was formerly official in the United States Pharmacopœia. The root of hydrangea arborescens has diuretic properties and was employed by the Cherokees and early settlers for urinary calculi. The root of Indian physic, porteranthus trifoliatus, was a popular remedy with the Indians on account of its emetic properties. This drug was official in the United States Pharmacopœia until 1880 and its action is said to resemble that of ipecacuanha. The root of wild indigo, baptisia tinctoria, is emetic and cathartic and may prove dangerous in large doses. It has stimulant, astringent, and antiseptic properties and has been used as a local application to sores and ulcers. The entire plant was official in the United States Pharmacopœia from 1830 to 1840. Crane's-bill root, geranium maculatum, is now official in the United States Pharmacopœia and is used as a tonic and astringent. The root of stillingia sylvatica, also official in the United States Pharmacopœia, has occupied a prominent position for more than a century as an alterative. The water-eryngo, eryngium yucci folium, is an old remedy for snake-bite and was official in the United States Pharmacopœia from 1820 to 1860. It is now employed as a diuretic, expectorant, and diaphoretic. In large doses it acts as an emetic and the root when chewed excites the flow of saliva. It is said to resemble senega in its action. American angelica root, archangelica atropurpurea, which was official in the United States Pharmacopœia until 1860, is used for its aromatic, tonic, stimulant, diuretic, and diaphoretic properties. The seeds are also employed medicinally. The root of black Indian hemp, apocynum cannabinum, is official in the United States Pharmacopœia and possesses emetic, cathartic, diaphoretic, expectorant, and diuretic properties. Pleurisy root, asclepias tuberosa, was much esteemed by the Indians and is official in the United States Pharmacopœia. It is used in some forms of disordered digestion and possesses diaphoretic properties. In affections of the lungs it promotes expectoration, relieves pain in the chest, and induces easier breathing. The leaves of stone-root, Collinsonia canadensis, are used by country people as an application to bruises. The root is employed for its tonic, astringent, diuretic, and diaphoretic properties. Culver's root, leptandra virginica, is official in the United States Pharmacopœia and is used as an alterative and cathartic and in diseases of the liver. The root of queen of the meadow, eupatorium purpureum, has astringent and diuretic properties and was official in the United States Pharmacopœia until 1840. It is interesting to note that elecampane, which was formerly grown in large quantities in England, is much used in the United States in affections of the respiratory organs, disorders of the digestion, hepatic troubles, catarrhal discharges, and in skin diseases. The root of echinacea augustifolia is said to be alterative, diaphoretic, and sialagogue. The Indians used the freshly scraped roots for the cure of snake-bite. Echinacea came into notice in England about seven years ago in the treatment of tuberculosis but it failed to justify the hopes that were entertained of it. The roots of comfrey and burdock, plants common in England, are also used medicinally in the United States. Many of these drugs are very largely used in the United States, both officially and otherwise.

STRICTURE OF THE URETERAL ORIFICE.

IN the *Australasian Medical Gazette* of July 20th Dr. H. C. Hinder has reported a curious case of ureteral obstruction which shows the value of cystoscopy in doubtful urinary conditions. A healthy man, aged 33 years, went to hospital complaining of left-sided attacks of abdominal pain which occurred at varying intervals and were at times accompanied by diarrhœa. The pain came on suddenly and was very severe and often accompanied by vomiting. It was felt most intensely in the left groin and extended thence into the renal region and down to the testicle which was drawn up. The pain was paroxysmal and gradually ceased after a few hours. During the attack no blood was observed in the urine but it was often very turbid immediately after it was passed. There was never pain on micturition until the last attack, when there was a considerable amount. The patient never observed that he passed a calculus. There was some frequency of micturition during the attacks but this symptom was not marked. When he went to hospital there was neither sign nor symptom. Ureteral calculus, which had been passed at the last attack, was diagnosed. A skiagram was twice taken with negative result. As the patient felt quite well he was about to be discharged when another attack occurred. Cystoscopy then showed that while the clear urine was spouting from the right ureter nothing was emitted from the left, which for a distance of three-quarters of an inch was distended and of a dull red colour. Per rectum this swelling could just be felt. Suprapubic cystotomy was performed. The swollen end of the ureter in the relaxed bladder was not well marked and without previous information might easily have been overlooked. But bimanually the swelling could easily be felt; it was so tense and hard that it was thought to contain a stone. The ureter was slit up and to Dr. Hinder's surprise about half a drachm of foul pus escaped and was followed by some turbid urine. The flaps of the incised ureter were stitched back to the bladder wall to keep the opening patent and the bladder was closed except for a suprapubic drain. Recovery was uneventful. About four months later another attack of renal colic occurred, after which a calculus of the size of a grain of wheat was passed. It is hard to say why the orifice of the ureter became blocked. Dr. Hinder thinks that it was probably injured during the passage of a sharp stone and that the resulting cicatrisation caused a constriction at the ureteral orifice.

A CHAUFFEUR AND THE COCAINE HABIT.

AN interesting and somewhat disquieting side-issue arose in a case recently heard before Mr. Francis at the Westminster police court, the defendant being charged with obtaining food and lodging under false pretences. It was stated that he had been addicted to the cocaine habit for years and a supply of that drug and two hypodermic syringes were found upon him at the time of his arrest, when, according to medical evidence, he was under its influence. Police evidence proved that in spite of his wretched condition he had taken out a motor-driver's licence during the past year and had had two serious accidents while driving. Mr. Francis expressed his surprise and hoped that information would be given to the authorities which would prevent the renewal of the licence. Mr. Titterton (the chief clerk) remarked that in the present state of the law he did not know how the licence could be refused. The case presents an obvious parallel to that of an engine-driver being taken suddenly ill on the foot-plate which was discussed somewhat freely at the beginning of the year. In this instance it is even harder to suggest an adequate remedy. In a recent letter to the *Royal Automobile Club Journal and Motor Union Gazette* Dr. H. E. Bruce-Porter called attention to the facts that the Competitions Committee has decided that all the drivers in the "Four-Inch" Club race shall be medically examined before being allowed to compete, and that all the drivers of the Motor-cab Company are examined for physical fitness. He hopes that ultimately all bodies issuing licences to drive will require a certificate to the effect "that the applicant is not suffering from any disease which renders it dangerous to

himself or the public if he be allowed to drive an automobile." He would have the medical examination repeated at every second or third renewal of the licence. We should welcome the adoption of such a regulation as affording an ideal precaution but are not at all sure that it would yet be tolerated. It would be wise, however, for private employers to protect themselves by insisting on an authoritative certificate of health and fitness from those to whom they intrust their lives and limbs. The danger is by no means an imaginary one. There is now a very large body of men employed in driving motor-cars and it is almost certain that some amongst them are suffering from serious and perhaps unsuspected disease. A case is within our knowledge where a chauffeur who had suffered from sudden and alarming syncopal and epileptic attacks proved to be the subject of a pronounced "Stokes-Adams syndrome." It was a question of some ethical delicacy as to whether his employers should be informed of the gravity of the man's condition. Possibly unconsciousness or other sudden illness of a chauffeur might account for certain unexplained motor-car accidents. The case of the cocaine-taker is, we hope, unique, for the victim of the most dangerous of all drug habits would probably soon prove himself so unfit to drive a motor-car, both mentally and physically, that the most casual employer could hardly fail to discharge him. The condition of the prisoner was described as "shocking" by the magistrate, and it is difficult to imagine with whom he had obtained employment.

THE GASTRO-INTESTINAL GANGLIONIC NERVOUS SYSTEM.

IN the Section of Physiology at the recent meeting of the British Association Sir James Grant, well known alike as geologist, physician, and man of affairs in Canada, drew attention to the remarkable effects in improved digestion and general restoration of health which he had observed clinically in a number of cases as the result of the application of electricity daily for two or three weeks over the abdomen by means of the instrument known as the "neurotone," of which he demonstrated the mode of use. He also gave the details of several clinical cases. To explain these effects he considered that the neurotone current applied to the abdominal ganglionic centres brings about a change in the axis-cylinders of the nerves supplying the intestines, thus restoring imperfect physiological continuity and re-establishing the free transmission of nervous impulses, with the result that digestion and general health are greatly improved. He believed that in many cases where there was no organic disease years might be added to life by the treatment which he had described. This, perhaps a little unguarded, expression of opinion led at once to the discovery by certain daily papers that Sir James Grant had unfolded the secret of the prolongation of life, a statement which lost no force by the fact that the distinguished physician's remarks had been made at a meeting of the British Association for the Advancement of Science. As many of our readers, like ourselves, may have been asked what Sir James Grant's views were we publish this brief note on his paper, but we cannot inform them where the instrument can be purchased.

DIAGNOSIS OF RÖTHELN BY BLOOD COUNTS.

DURING an epidemic of "measles" occurring amongst the men in an Argentine cavalry regiment, which Dr. Javier Ponce De Leon was able to show was one of rötheln only, he made use of blood counts as one method of diagnosis. He and Dr. Pedro Labaqui have studied this method in other epidemics also and find that in rötheln there is a diminution of the leucocytes, more especially during the eruptive period, and that the number of mononuclear corpuscles is increased, the maximum occurring during the eruptive period. Dr. De Leon also found that eosinophile corpuscles decreased slightly in number during the eruptive stage and slowly increased as convalescence progressed. He suggests that in doubtful cases a single drop of blood treated by Hoffmann's stain and then by hæmatin and eosin will show a much larger number of mononuclear bodies than would be seen in measles or scarlet fever, and thus will form a ready means of diagnosis.

THE MEDICAL AUTHORSHIP OF THE THIRD GOSPEL.

"REMORSELESS analysis" is the weapon of the Higher Criticism in its assault on Tradition. That it can be employed with equal if not greater effect on the side of the defence is also manifest—nowhere more clearly than in the literature which has accumulated round the question as to who wrote the Third Gospel. That that book, pronounced by Renan to be "the loveliest ever written," had for its author a physician of Gentile, probably Greek, origin, whose name was Luke, was accepted not only by early Christians but by mediæval and modern divines down to the middle of last century, when the Tübingen School may be said to have brought it into court. Counsel *pro et contra* have since been heard—

"Praeconis ad fastidium,"

and the summing up and verdict, for which the world has been waiting, may now be said to have been given, and that in favour of the traditional view. Professor Harnack demonstrates that those who collected the Gospels into a quartette shortly after the appearance of the Fourth Gospel gave the Third the title which it afterwards bore without challenge—to wit, "According to Luke (κατὰ Λουκᾶν)." "Anonymous compilations," he says, "in the course of tradition easily acquire some determining name, and it is easy to imagine an author writing under a pseudonym. But in the case of a writing determined by a prologue and a dedication we require some very definite reasons for a substitution of names, especially when this is supposed to occur only one generation after the date of publication" ("Lukas der Arzt," p. 2). The tradition, "so unvarying and so constant from the first, and becoming vocal and explicit by the time of Irenæus," adds Dr. Thomas Nicol, "is to be explained only by the fact that St. Luke was the writer. The book was ascribed to him, just as the 'Annals' are ascribed to Tacitus and 'Romeo and Juliet' to Shakspere." The able and accomplished theologian just named, whose "Baird Lectures"[1] delivered from the chair of Biblical Criticism in the University of Aberdeen last year contain a luminous exposition of the whole question, shows further that the Third Gospel and the Acts of the Apostles are from the same pen. "The language, style, and literary arrangement are identical. Characteristic words and expressions are found in both. The author of either book has skill in writing Greek and the Septuagint was *his* Bible more than St. Paul's. Again, assuming that the Gospel and the Acts are by the same hand, we learn from the 'we-sections' of the Acts that he was a companion in travel and a fellow-labourer of St. Paul. It is not enough to say that these 'we-sections' are interpolations or portions of a diary of travel belonging to some other person. The literary characteristics, the miraculous incidents, and other special phenomena show them to be of exactly the same texture as the rest of the work. Finally, the crowning proof of identity which fixes the authorship unmistakably upon Luke, the 'Beloved Physician,' is the indication of medical interest and the employment of medical phraseology which runs

[1] The Four Gospels in the Earliest Church Histories. Blackwood, Edinburgh and London, 1908.

right through the Acts, and are found in the Acts and the Gospel equally." This last line of argument might be strengthened by consideration of the treatment applied by the Good Samaritan to the man wounded by brigands—to wit, the bandage saturated with wine and oil, a practice for which more than a century later than St. Luke there is the authority of Galen. *Sed haec hactenus.* It will, indeed, tax the resources of the Higher Criticism to shake the conclusion of latest finding of the orthodox that "we are fully warranted in affirming that the evidence of the books themselves entirely coincides with the verdict of early Church history regarding the authorship and that there are few facts in literature better established than this—that St. Luke, the Beloved Physician, the companion and fellow-labourer of St. Paul, is the author of our Third Gospel and the Acts."

LUMBAGO OR RUPTURED MESENTERY.

Dr. De Busscher and Dr. Schoenfeld at a recent meeting of the Ghent Medical Society mentioned several cases where injuries followed by pain in the loins which was apparently of the nature of ordinary lumbago proved to be due to a rupture of the mesentery, this being made evident by effusion into the hypogastric region. In one case this effusion was thought to denote tuberculous peritonitis, and tuberculin was injected for diagnostic purposes. There was no reaction and the patient ultimately recovered under rest and an abdominal belt. Mesenteric injury is occasioned by violent exertion, such as lifting a heavy weight, the patient having previously filled his lungs by a very deep inspiration, thus fixing the origins of the shoulder muscles, and at the moment of supreme effort involuntarily contracting the diaphragm and abdominal muscles, thus tearing the mesentery. Probably operative measures are rarely required, the effusion becoming reabsorbed with the help of an abdominal bandage, the patient being, of course, kept at rest. These cases are of considerable interest as questions of prognosis as well as of diagnosis frequently occur in connexion with the insurance of workmen, and disputes as to the nature and duration of cases of "lumbago" are by no means uncommon. Of course, in examining them care must be taken that the bladder and sigmoid flexure are empty.

THE autumn meeting of the South-Eastern Division of the Medico-Psychological Association will be held, by the courtesy of Dr. F. A. Elkins, at the Metropolitan Asylum, Leavesden, on Tuesday, Oct. 6th. Dr. Elkins will entertain the members to luncheon, after which the meeting of the divisional committee will be held, followed by the general meeting. The members will dine together after the meeting at the Café Monico, Piccadilly-circus, London, W., at 6.45 P.M., provided that a sufficient number agree to dine. (Dinner 5*s.*, exclusive of wine. Morning dress.)

A TELEGRAM from the Governor of Mauritius received at the Colonial Office on Sept. 18th states that for the week ending Sept. 17th there were 7 cases of plague reported and 5 deaths from the disease.

THE discussion upon Human and Bovine Tuberculosis at the International Congress on Tuberculosis at Washington is to be opened by Professor Robert Koch.

BRISTOL MEDICAL SCHOOL.—The annual Bristol medical students' dinner will be held at the Royal Hotel, Bristol, on Oct. 1st. Major H. C. Thurston, C.M.G., R.A.M.C., will be the president and Sir Rubert Boyce, F.R.S., the guest of the evening. Tickets (5*s.* each) may be had on application to the honorary secretary, Bristol Royal Infirmary.

NOTE ON FRENCH AND GERMAN FOR MEDICAL STUDENTS.

BY WILLIAM OSLER, M.D. OXON. & MCGILL, F.R.S.,
REGIUS PROFESSOR OF MEDICINE, OXFORD.

AT the beginning of each academic year I am in the habit of sending to the undergraduates in medicine a memorandum on the importance of the study of French and German. A good working knowledge of these languages may be very easily obtained. The plan recommended is: 1. The student provides himself with elementary text-books in French and German on the subjects at which he is working. With a very slight knowledge of grammar and with the aid of a dictionary he can very quickly learn to read such books intelligently. 2. For the senior student reading classes are formed, particularly in physiology, and of these Miss Florence Buchanan, at The Museums, has had charge, and she has been most helpful. 3. In the long vacation students are urged to spend a semester at one of the French or German medical schools. Through the courtesy of the professors in charge I have found it very easy to get places for men in the laboratories. Lastly, the senior students are recommended to get into the habit of looking over one of the French or German journals each week. With a little persistence and with a very slight expenditure of time a medical student should have both these important languages at his command before graduation.

The following list of books kept by Messrs. Blackwell and Co. and Messrs. Parker and Son, Oxford, may be useful:—E. Aubert: "Phénomènes de la Vie," 1*s.* 8*d.*; "Prémières Notions de Chimie," 1*s.* 6*d.* J. Joubert: "Traité d'Électricité," 6*s.* 4*d.* H. de Meric: "Dictionnaire des Termes de Médecine," Part I. (English-French), 5*s.*; Part II. (Français-Anglais), 4*s.*; Two Parts in one volume, 7*s.* 6*d.* F. Schenck and A. Grueber: "Leitfaden der Physiologie," 5*s.* 5*d.* Kienitz-Gerloff: "Physiologie und Anatomie des Menschen mit Ausblicken auf den ganzen Kreis der Wirbeltiere," 3*s.* E. Cohen: "Vorträge für Aerzte über physikalische Chemie," 8*s.* J. E. Reynolds: "Leitfaden zur Einführung in die Experimentalchemie," four vols.: (1) Einleitung, 1*s.* 5*d.*; (2) Metalloide, 2*s.*; (3) Metalle, 2*s.*; (4) Chemie der Kohlenstoffverbindungen oder organische Chemie, 2*s.* 8*d.* P. Blaschke: "Medicinisches Wörterbuch in deutscher, französischer und englischer Sprache in einem Alphabet," 6*s.* Hugo Lang and B. Abrahams: "German-English Dictionary of Terms used in Medicine and the Allied Sciences," 15*s.* H. G. Fiedler and F. E. Sandbach: "A First German Course for Science Students," 2*s.* 6*d.*; "A Second German Course for Science Students," 2*s.* 6*d.* W. A. and E. E. Osborne: "German Grammar for Science Students," 2*s.* 6*d.*

Oxford.

NOTES ON THE LACTIC FERMENTS AS THERAPEUTIC AGENTS.

BY FRÉDÉRIC S. MASON, B.SC. (FRANCE), M.P.S.

SINCE Metchnikoff began to publish his investigations and the butter-milk theory became popular much clinical evidence has been forthcoming. The object of this paper, however, is not to question or to affirm the truth of the lactic-acid theory but to point out some of the fundamental principles which underlie Metchnikoff's reasonings and which appear to have been overlooked in the enthusiasm with which the medical profession and the general public are taking to the butter-milk craze. Neither is there any intention to specify any particular bacteria for curdling milk, since it is well known that the property of producing lactic acid is common to a vast number of micro-organisms. As a matter of fact, many saprophytes and pathogenic bacteria which fall into milk on exposure to the air are just as capable of giving rise to lactic fermentation under favourable conditions as the ferments maya, kephir, leben, &c., which have been so long in use amongst Oriental races. The latter, however, contain sufficient useful lactic-acid-forming bacilli to counteract those which give rise to toxins and secondary alkaline fermentation. The slight danger of even such pathogenic bacteria as the streptococcus, staphylococcus, typhoid bacillus, the spirillum of Asiatic cholera, &c., has been

shown by experiment to be due to the fact that in presence of certain bacilli of the Bulgarian and other Oriental milk ferments they cease to multiply after a time. In Eastern Europe the milk of the cow, ass, goat, and buffalo is used to make various articles of food with ferments which contain, besides the useful Bulgarian lactic-acid bacillus, great numbers of objectionable yeasts, butyric acid-forming bacilli, and even dangerous pathogenic organisms, and yet the longevity and strength of these people are remarkable. It is desirable, before making empirical use of the lactic ferments or pure cultures of special bacilli in the treatment of diseases of the gastro-intestinal tract, that the practitioner should be able to reason out for himself why lactic ferments give good results rather than that he should lean on the clinical findings of others, and the following review of the question will explain in a great measure these reasonings.

The formation of lactic acid must of necessity be at the expense of nutritive material acting as a culture medium in which the bacteria proliferate, whether in the laboratory or within the human alimentary tract. Pasteur in 1859 showed that a diplococcus caused the souring of milk when exposed to the air by the transformation of the sugar (lactose) into lactic acid; later, however, he found this property to be shared by an indefinite number of micro-organisms, since hexoses are broken down by this process of fermentation into the simpler chemical body lactic acid. The staphylococcus aureus, staphylococcus albus, bacterium termo, bacillus subtilis, bacillus coli communis, bacillus putrificus, sarcina ventriculi, oidium lactis, bacillus pyocyaneus, bacillus lactis aerogenes, and hundreds of others change the chemical arrangement of the atoms in a molecule of organic matter, producing various odours, colours, aromatic substances, modifying their physical properties partially or entirely and giving rise to lactic acid amongst the other products. We have examples of these changes in cheese, koumiss, &c. In the therapeutic administration of lactic-acid-forming bacteria, however, we are chiefly concerned with those which prevent secondary decomposition of the proteids of food, and the whole question of their value depends on this point which has not in the writer's opinion been insisted upon sufficiently. We know how complicated the composition of food is; our knowledge of the chemistry of the proteids is still very incomplete, but we know that albumins and albuminoids are made up of complex groups derived from the benzine ring, carbohydrates, amides, and groups in which the elements sulphur, phosphorus, and nitrogen have an important place, and that under the influence of the various micro-organisms a process of hydration, dehydration, and splitting up of these groups into simpler groups occurs. The slow process by which our knowledge of lactic ferments has been evolved has become further complicated by the facility with which various culture media modify the products of fermentation.

In order to reach an intelligent classification necessary to this question we must understand that a true lactic acid bacillus exists only in theory, since at least 150 species of the lactic-acid-forming type are known which give very nearly the theoretical yield of lactic acid from a given amount of saccharine matter under suitable conditions, which will prevent the lactic acid formed from arresting the fermentation, just as the ethylic alcohol formed by yeast arrests fermentation of a saccharine solution. The living cells of these bacilli are unable to resist indefinitely the anti-fermentative action of the acid, which is precisely the preservative of sourkrout, butter-milk, &c.

Certain Bulgarian bacilli found in the butter-milk of Eastern Europe, however, are not only the most active yet studied, but they resist longer the increasing amount of lactic acid produced through their agency; hence the Bulgarian bacilli are usually preferred for therapeutic purposes. Most of the lactic ferments belong to the class known as para-lactic and the pseudo-lactic ferments. The pseudo-lactic ferments are those which give rise to comparatively little acid but give the aromatic and peptonising products to cheese, modify sourkrout, and other preserved vegetables and prevent their putrefaction. The para-lactic ferments are those which attack other substances besides the carbohydrate groups and decompose saccharine fluids with the production of alcohol, acetic, formic, malic, and other acids with variable amounts of lactic acid. These para-lactic and pseudo-lactic ferments should not predominate in those employed in the treatment of disease, and preference should be given to pure cultures of bacilli which give rise to little else but lactic acid. It is unnecessary to discuss fully the stereo-chemistry of the varieties of lactic acid formed by these bacilli, although it has a somewhat direct bearing on the question, since the various lactic acid bacilli give rise to dextro-, lævo-, inactive, &c., lactic acid according to the culture media employed. We can understand therefore how condition must of necessity be modified in the intestinal tract by the quality of the food ingested. The best clinical data, therefore, will be obtained when these considerations are taken into account, and from such observations alone can practical deductions be obtained. For example, the bacillus coli communis gives rise to inactive lactic acid with lævulose, while with glucose we obtain a dextro-lactic acid. Kayser, moreover, has shown that the presence or absence of peptone affects the proportions of the acids formed. Since the lactic ferments act best on the carbohydrates in the presence of the peptones derived from proteids ingested, and secondary changes of these peptones are prevented by the lactic acid bacilli, we may hope for a scientific solution of the problem of prolonging life by a study of these conditions. There appears to be no doubt that while saccharine matter is essential to the life of the lactic acid bacilli these bacilli are also able to utilise, partially at least, the carbohydrate groups of the proteids, and this is the most reasonable explanation of the prevention of putrefaction which we recognise by the presence of indicanuria. That the proteids are broken up by these lactic acid bacilli is proved by the fact that the casein of milk is peptonised to the extent of 38 per cent. and that we obtain 68 per cent. of the albuminoid phosphorus as soluble calcium phosphate by their action on milk.

By the power of a lactic ferment we do not mean merely the quantity of lactic acid produced but the capacity of the living cell to resist the action of the acid. The therapeutic value of lactic acid bacilli therefore must not be considered from the standpoint of lactic-acid production only. We realise this better when we consider that the proliferation of new cells is effected by the conversion of sugar and that the conversion of this saccharine matter cannot serve two purposes at the same time—i.e., furnish new cells and lactic acid from the same material. Briefly, therefore, and without entering into the detailed bacteriological considerations of Rist and Khoury, Foucard, Metchnikoff, Massol, Duclaux, Maze, Herter, Cohendy, Dybowski, and other investigators who have foreshadowed the clinical findings of Brudzinsky, Tissier, Combe de Lausanne, Hayem, Bouchard, Beidenham, Morax, Hoppe-Seyler, Ewald, Hershler, Stern, and numerous authorities, there is good ground for using lactic acid bacilli either in the form of butter-milk or in the dry form of the bacilli themselves in order to prevent, or at least to diminish, intestinal intoxications and the formation of such products of secondary fermentation as give rise to tyrosin, the conjugated etherial sulphates, and xanthin compounds in excess. Pure cultures of desirable bacilli can be isolated from the Bulgarian ferments and not only resist gastric digestion and reach the intestine alive but proliferate freely and establish themselves as a part of the intestinal flora by adapting themselves to the more or less anaerobic environment and thrive in the culture media provided by ordinary food. These bacilli prevent the breaking-up of the peptone into excremental products which diminish the amount of nutritive material required for the rebuilding of the sero-albumins and sero-globulins which are elaborated by the epithelial cells of the villi during the passage of the peptones to the portal vein. The mere splitting-up of the sugar into lactic acid is no advantage, since lactic acid is eliminated chiefly as carbonic acid and water. The useful rôle of the lactic acid bacilli therefore appears to consist in preventing changes in the proteids beyond a certain point. As long as there is a supply of saccharine material the bacilli multiply rapidly, and once established as a part of the intestinal flora they counteract the action of such bacteria as the colon bacillus which splits up the proteids beyond the desired limit, with production of toxins, gases, &c., and diminishes the amount of nutrition supplied to the blood. Laboratory experiments have been confirmed by clinical observations showing that the lactic bacilli once established within the alimentary canal prevent putrefaction and that this only begins again when the lactic acid bacilli die

From a practical standpoint the dried bacilli are preferable to butter-milk, since they can be obtained by evaporation at a low temperature and their activity indefinitely preserved in hermetically sealed tubes. The economy of implanting milk from day to day with old butter-milk is not desirable, because of the possibility of the culture degenerating into a mixed culture and since a 30 centigramme tablet of pure cultures will curdle a litre of boiled milk (when cooled to 40° C.) in about 12 hours, besides partially peptonising the milk proteid; the economy therefore is uncalled for. Equally good results, however, are claimed by the administration of the tablets of dry bacilli with or without milk. The amount of lactic acid obtainable with lactic ferments is only limited by the amount of saccharine matter present in the culture medium, for if the lactic acid formed is neutralised from time to time by calcium carbonate the bacilli continue to grow.

The lactic acid therapy has still some opponents on account of the somewhat sensational statements made and the literature on the subject leaves too much to the imagination; the writer hopes therefore that these considerations will explain the possibilities of the lactic acid bacilli in the treatment of many difficult gastro-intestinal diseases, the prevention of gout and rheumatism, and the long train of sequences leading up to nephritis, arterio-sclerosis, and pre-senility.

Paris.

REPORT OF THE ROYAL COMMISSION ON THE CARE AND CONTROL OF THE FEEBLE-MINDED.

II.[1]

THE next series of problems dealt with by the Commission is that connected with mental defect and crime, and the after-school life of feeble-minded persons in prisons, workhouses, casual wards, common lodging-houses, and shelters is considered. Dr. J. Scott, in an able *résumé* of the problems, states that during his connexion with the London houses of detention he has dealt with many feeble-minded persons who could not be certified as insane but who could not be fairly held responsible for their misdeeds. Many of these are such as have not been kept in any control by their parents and who have had but scanty education owing to the undesirability of their presence in the ordinary schools. They are only fit for unskilled labour and even for it are often too stupid or too wanting in application. They are frequently in trouble for breaking the law and being sent to prison, usually for short periods only, soon return to their mischievous ways. In prison they are not amenable to penal discipline or to reforming influences. They have but little self-respect and home ties do not weigh much with them, so that to many of them prison is a harbour of refuge where they are spared the trouble of getting food and lodging. Dr. Scott further adds that when such persons are at liberty their friends do not as a rule welcome them nor are they fit to take part in the struggle for existence. By their proneness to commit larceny, arson, indecent assaults on children, &c., they are a constant source of annoyance, expense, and danger. Many are unfit, without care and discipline, to lead inoffensive lives, and it is important to consider if any means can be taken to prevent these undesirables from producing their like. The evidence that came before the Commission is unanimously in favour of segregation or detention, in a large number of cases of mental defect, after the period of childhood. Such detention as is now practised is neither preventive nor reformatory. It has relation to the fact that an offence has been committed, but none to the fact that the offence was committed by a mentally defective person. Miss Dendy, honorary secretary of the Lancashire and Cheshire Association for the Permanent Care of the Feeble-minded, gave evidence to show how horribly disastrous are the results of leaving the feeble-minded at large, and quoted cases to show the evil uses to which such persons are put by unscrupulous relatives. Mr. Allen, chairman of the Special Schools Committee of the London County Council, thought that probably the bulk of the children who would go to the custodial homes never ought to go out into the world at all, and on leaving school should be drafted into colonies where they may be efficiently segregated. Dr. Ashby was of opinion that the large, unguarded, and unprotected class of idiot and imbecile children and older people for whom no supervision exists tend to an increase of the criminal and immoral classes. Dr. Whitwell said that the feeble-minded who were capable of a considerable degree of education were usually retained at home, at least until after puberty, but that at that time physical evolution taking place, in the absence of intellectual control, development was apt to result in acts of theft, cruelty, incendiarism, homicide, and various offences of a sexual or perverted sexual nature, and that under existing conditions education on the usual lines was so entirely erroneous as to result in the feeble-minded spending their lives alternately in the prison, the workhouse, and the asylum. Such as have had the advantage of having been in asylums for the feeble-minded lose on their discharge all the advantages of their training and sink by degrees to the workhouse. Dr. E. Marriott Cooke points out how those who have benefited most by the care and training which they have received and who seem to be the most promising are those for whom detention is especially required. While in the asylum they present a bright and intelligent appearance and perhaps have become, under supervision, to some extent self-supporting, but attempts to place such persons out in the world generally meet with failure and the individuals ultimately gravitate to the workhouse. Dr. T. S. Clouston in his evidence said he had come to the conclusion that feeble-minded young women in a large city were subject to overwhelming temptations and pressure towards sexual immorality. He found that it was the exception among a certain class for any of them not to have been sexually tampered with. Many of them had illegitimate children and at a very early age. He is of opinion that when illegitimate children are borne by such young women the chances are enormously in favour of their turning out to be imbeciles, or degenerates, or criminals. Mr. Legge, then inspector of reformatory and industrial schools, thought that every feeble-minded person should, on reaching a certain age, be examined, and if found to be suffering from mental deficiency such as might render him unfit to protect himself or not fully responsible for his actions, be segregated for an indeterminate period. Sir Edward Fry pointed out that in a ruder state of society little heed was taken of feeble-minded children and that many of them probably died at a comparatively early age, but that as we learn to think more tenderly of the inferior members of our race we seek to protect them from their calamities and to preserve their lives to the utmost. But in so doing we incur the responsibility of preventing the perpetuation of a low class of humanity, for otherwise the beneficence of one generation would become the burden and injury of all succeeding ones.

In the three years 1902 to 1904 3119 juvenile offenders passed through remand homes in London. Of these there were taken at haphazard 109 boys and 28 girls. Of the boys 37 were graded between "backward, slightly mentally deficient, and mentally deficient," and of the girls 16 were similarly classed. If these figures are fairly representative it may be said that a large number of juvenile offenders, in whom the connexion between mental defect and criminality may be observed in the earliest stages, come before the magistrates. But unfortunately no advantage is at present taken of this opportunity of dealing with the evil at its first manifestation. At a little later stage these unfortunates are sent to prison or are "bound over" or discharged. Unless certified as insane they cannot be detained. Even if treated as insane, which they can hardly be under the present law, on discharge to the workhouse the Poor-law medical officer and the magistrate at the workhouse may refuse certification and order of detention. There is no institution intermediate between the prison and the lunatic asylum to which they may be admitted. Of the prisoners at Pentonville it appears that about 100 a year were so far mentally affected as to be quite unfit for prison discipline. These represent the extreme cases which mostly drift to asylums. Besides these not less than 20 per cent. of the prisoners show signs of mental inefficiency. In the various local prisons of England and Wales the same state of affairs is to be found. In the year ending 1904 there were 145 prisoners who, although not certainly insane, were unfit for ordinary penal discipline by reason of mental deficiency. These did not represent the total number of the

[1] No. I. was published in THE LANCET of Sept. 19th, 1908, p. 890.

mentally defective but only the worst, for there are many mentally defective who are considered to be fit for penal discipline. The prison commissioners, to whom all these facts have long been familiar, have already made regulations for dealing with the weak-minded in local prisons but the regulations, good as they are, do not suffice. It has been suggested that on conviction mentally defective persons should be committed to feeble-minded homes or colonies, places of the nature of a half-way house between a prison and a lunatic asylum. In regard to those committed to convict prisons the same evils obtain. At Parkhurst, where there are a considerable number of weak-minded convicts, they are brought together and treated as if they were in a labour colony. Under this *régime* the convicts behave much better than under the ordinary prison rules and are more easy to manage. From the evidence it appears that many competent observers are of opinion that if the constantly recurring and fatuous crimes of mentally defective persons are to be prevented long and continuous detention of such persons will be necessary. "From the earliest age when they appear before the magistrate as children on remand or as juvenile offenders until and throughout the adult period of their lives the mentally defective, at first reprimanded and returned to their parents, then convicted and subjected to a short sentence and returned to their parents, and then later continually sentenced and re-sentenced and returned to their parents or friends till for crimes of greater gravity they pass to the convict prisons, are treated, as this reiterated evidence shows, without hope and without purpose, and in such a way as to allow them to become delinquents of the worst type and to propagate a feeble progeny which may become criminal like themselves." With a view to coping with these problems it is recommended that a central authority should be responsible for the supervision of all cases of mental defect; that local authorities should be responsible for making provision for such cases; that there should be a statutory obligation imposed on the police and all prison authorities to report all these cases to the local authority; and that all courts of justice should have power to order the detention of a mentally defective person in a suitable institution instead of pronouncing a sentence of imprisonment.

That there is a large number of mentally defective persons among those who are to be found in the casual wards, common lodging-houses, and refuges is certain. Many of these are physically and morally dangerous and the Commission has reached the conclusion that there should be some system by which these persons should be brought under an authoritative control by which they could be detained and made to labour according to their ability. So, too, experience has shown that many cases of habitual inebriety are associated with mental defect, and the Commission suggests that the powers of the county committees and of the Board of Control should extend to mentally defective inebriates as well as to other classes of the mentally defective. Other recommendations with reference to this subject are that the county councils should be placed under legal obligation to provide accommodation for mentally defective inebriates and that the Inebriates Act should be amended to facilitate the committal to suitable institutions of persons who are shown to the satisfaction of a criminal court to be mentally defective inebriates.

A large mass of evidence has come before the Commission indicating that, in addition to those who are certified as lunatics, there is another large class of persons who can be with difficulty distinguished from the "certifiably insane" who are socially dangerous and who from weakness of mind are not wholly responsible, and accordingly the question arises whether the condition of being irresponsible should not also attach to other mentally defective persons besides certified lunatics. In the trial of such persons the Commission suggests the adoption of the important principle that the question of the committal of an alleged offence should be separated from the question of alleged mental defect in the accused person and his consequently relative responsibility and from the problem as to his appropriate treatment. On this principle it is proposed that in a court of summary jurisdiction the justices should, prior to conviction, remand the accused to a suitable receiving house, and subsequently, if the medical certificates justified such a course, order the reception of the accused in an institution considered suitable by the committee for the care of the mentally defective. On the same principle, after the conviction of the offender he might be bound over to come up for judgment on the surety of a representative of the committee. The same procedure is suggested for use at assizes and quarter sessions. If any sentence be imposed by the court it is suggested that it should have such reference to the fact of the committal of the offence as the court may decide to be just, but that afterwards, where necessary, a reception order should be made which would be renewable from time to time and which would lead to such treatment and care as from the point of view of mental defect the committee might think necessary.

RECENT EXPERIMENTS ON PLAGUE DISINFECTANTS IN INDIA.

THE following are the main portions of a lengthy scientific report on the use of disinfectants in connexion with plague addressed by Captain W. Glen Liston, I.M.S., Acting Director of the Bombay Bacteriological Laboratory, to the Sanitary Commissioner with the Government of India and now published by the latter. The experiments on the pulicidal powers of the disinfectants enumerated below have been carried out by Captain T. H. Gloster, I.M.S., with much labour and care. It will be well at the outset properly to appraise the value of disinfection in connexion with plague. It is an axiom to state that a disinfectant can only be useful when applied directly to the micro-organisms which it is required to kill. In order, then, that a disinfectant may be usefully employed to combat the spread of plague, it is necessary to know where and to what extent plague germs may exist in nature.

Channels of Plague Infection.

It has recently been conclusively proved that the plague is communicated to man from rats by means of rat fleas. The disease is seldom, if ever, except by accident, transmitted directly from sick persons to healthy individuals; in other words, contact with the excreta of sick animals or man is rarely the means by which the disease is acquired. Excreta, if they contain plague bacilli, are, as a rule, harmless. The plague bacilli when present in excreta rapidly disappear from them; the excreta become disinfected by natural processes, a few hours sufficing in the Indian climate to bring about the destruction of any plague bacilli in them. This natural disinfection is accomplished either by exposure of the plague bacilli to desiccation or in moist conditions is brought about by the development and multiplication of saprophytic bacteria which are inimical to the existence of plague bacilli. Plague is communicated from rats to rats and from rats to man by means of the rat flea. In the body of this insect the plague bacilli are protected from the above-mentioned natural disinfectants. Here they are protected from desiccation and from the action of saprophytic bacteria. In the stomach of the flea, too, they find a suitable food-supply in the blood which is sucked by the insect from its host. The digestive processes going on in the stomach of the flea appear to cause little injury to the plague bacilli. As long as the flea remains alive the bacilli are protected and preserved. On the death of the flea the natural disinfection processes referred to above quickly destroy any plague bacilli which may have been present in its body. We are thus in a position to know that plague bacilli exist in nature either in the body of a plague-sick animal (chiefly the rat) or in the stomach of a rat flea which has fed on such an animal. Any disinfectant to be useful must be directed against the plague bacilli in these situations. The destruction of infected rats and fleas will bring about the destruction of the plague bacilli within their bodies. The bacilli only retain a successful existence in the living bodies of these creatures.

Successful Disinfection.

The most successful disinfectant will be the one which is capable of destroying both rats and their fleas. The fact that rats and fleas are generally to be found in places inaccessible to the application of the ordinary disinfectants materially handicaps the use of these substances; indeed, it may be said that the occasions when the common disinfectants may be used with advantage are few and far

between. Some good may perhaps be done by the application of a pulicide to a room when, for example, a rat is found dead in it and the inhabitants of the room are compelled to live or to work in it. The pulicide must, however, be applied within 24 hours after the death of the rat, and it should be remembered that the room is always liable to reinfection by the advent of fresh plague-infected rats carrying fleas with them into the room. From what has been said above it is obvious that a gaseous disinfectant which is alike poisonous to rats and fleas and which is capable of penetrating into the inaccessible places frequented by these creatures is the only one which offers much hope of success in combating the plague.

Experimental Disinfection.

At present experiments are being carried on in the Bombay Laboratory with a machine (Clayton gas machine) which can produce a large volume of gas, poisonous alike to rats and to fleas. The advantage of this machine is found in a mechanical device which forces the gas into the room to be disinfected and so brings about a greater concentration and diffusion of the disinfectant than have ever before been accomplished. Apart, however, from these experiments, which have not yet been completed, certain experiments have been carried out with liquid disinfectants. These latter experiments prove that the ordinary disinfectants used for destroying bacilli are of little use in destroying plague bacilli which are protected from the action of the disinfectants within the bodies of the fleas which are capable of withstanding immersion without harm in the majority of the most powerful bacteria-killing disinfecting fluids. Thus, for example, Captain Gloster has shown that fleas will emerge unscathed from an exposure of ten minutes in a solution of so powerful a bactericide as a 1 in 500 dilution of acid perchloride of mercury. On the other hand, he has shown that fleas exposed to the action of an emulsion of kerosine oil in a dilution of 1 in 1000 for two minutes are almost always killed, while this substance failed to kill bacteria even in a dilution of 1 in 10. The experiments detailed above were carried out in test tubes, the disinfectants being thus brought intimately in contact with the fleas. It was necessary, therefore, to test the efficiency of these disinfectants in actual plague-infected rooms. On the one hand, the Plague Research Commission has shown that infected rooms still retain their infection after thorough disinfection with so powerful a germicide as 1 in 750 acid perchloride of mercury. Of 31 observations infection remained in the houses after this form of disinfection in 13 cases, or 29 per cent., of the houses examined, a percentage which was almost exactly the same as those found in houses which had not been disinfected at all. On the other hand, Captain Gloster has been able to prove that plague-infected rooms can be readily disinfected by the application of an emulsion of kerosine oil.

Experiments on Animals.

The following further experiments were carried out. A small room or godown was infected with plague. A guinea-pig which had been placed in it was found dead from plague on Feb. 24th. The dead guinea-pig was removed and replaced by a healthy one. This guinea-pig died from plague on Feb. 27th. Another healthy guinea-pig was placed in the godown; it died from plague on March 6th. A fourth guinea-pig was placed in the godown and it died from plague on March 9th. A fifth guinea-pig was then introduced and being sick of plague on the 4th it was chloroformed to death. The godown was thus proved to be thoroughly infected on the 11th. The floor of the godown was washed out with kerosine oil emulsion, 1 in 20, and on the following day a healthy guinea-pig was introduced. This guinea-pig remained healthy and lived in the godown till April 9th. The experiment was repeated in the case of another godown. Three successive guinea-pigs having died from plague in it the godown was then disinfected with 1 in 20 dilution of kerosine oil emulsion. On the following day a healthy guinea-pig was placed in the godown. The guinea-pig lived for days in the godown and remained well in both the above instances. A very badly infected godown was rendered safe by the floor being washed out with a 1 in 20 dilution of kerosine oil emulsion. The majority of the substances tested were patent products and the tests were made with the samples sent for trial.

Kerosine Oil Emulsion Recommended.

Captain Liston strongly recommends the use of kerosine oil emulsion, for disinfection of this sort can with advantage be carried out. The kerosine oil emulsion can be readily prepared. Three parts of Sunlight soap are dissolved by boiling in 15 parts of water. Warmed kerosine oil is added to this soap solution gradually up to 100 parts. The oil and soap water should be mixed together, shaking or stirring the whole. Hydrocarbon emulsion is prepared in a similar way to kerosine oil emulsion, but in this case the hydrocarbon need not be warmed. This substance makes a better emulsion in water than kerosine oil does, and it has a bactericidal power slightly greater than that of carbolic acid, the carbolic acid coefficient being about 20.

THE MUSSEL INDUSTRY AT WELLS: AN INTERESTING STORY IN EPIDEMIOLOGY.

THE city of Norwich has this summer suffered from a considerable amount of enteric fever, which the medical officer of health, Dr. H. Cooper Pattin, suspected to be largely due to the consumption of "shell-fish." In June he communicated with the newly appointed county medical officer of health of Norfolk (Dr. J. T. C. Nash, formerly of Southend, whose work on shell-fish and enteric fever is well known), asking his help administratively in connexion with some cases of this disease which Dr. Pattin thought were due to cockles garnered within the county area. The county medical officer personally inquired into the various cockle-layings mentioned by Dr. Pattin but found the conditions such as to enable him to exonerate these particular layings as probable sources of enteric fever. In the meantime Dr. Pattin had traced the culpable cockles to the Orwell, below Ipswich—a notorious spot—and had added Wells to his list of suspected sources. Dr. Nash promised to visit this latter town in due course.

It appears that there were from Wells two notifications of enteric fever in June and three in July. At the beginning of August Dr. Gordon Calthrop, the medical officer of health of Wells, asked the assistance of the county medical officer of health in tracing the source of this outbreak. His own inquiries had led him to think that the great danger to the town lay in the risk of the spread of the disease through the mussels. Dr. Calthrop further thought that he had been able to exclude water-supplies, milk, insanitary conditions, etc., as probable sources of the outbreak. Dr. Nash accordingly arranged to visit Wells on August 12th and had the advantage of being accompanied on his visit of inspection not only by the medical officer of health (Dr. Calthrop) and the sanitary inspector, but also by the chairman of the sanitary committee of the Wells urban district council. The results of this investigation are quoted fully in the report of the monthly meeting of the Wells urban district council in the Norwich press. Briefly, Dr. Nash's investigation supported Dr. Calthrop's prior conclusions. The pollution of the mussel layings was evidently gross, but Dr. Nash pointed out that Wells being a town with old conservancy methods its sewers carried down very little in the shape of fæcal excrement—which was for the moment a matter for congratulation—because the sewage contaminating the layings was "*pro tanto* less likely to specifically pollute the mussel lays with the specific germ of typhoid fever," but still it was "impossible to take any other view" than that the shell-fish were "liable to serious and occasionally dangerous pollution," seeing that domestic slops containing a considerable quantity of urine (which is known to be infective in from 20 to 30 per cent. of cases of enteric fever), and probably occasionally a little excrement also, were constantly discharging over the mussel layings.

In accordance with Dr. Nash's recommendation Dr. Calthrop sent samples of mussels from the layings to Professor R. T. Hewlett. These were reported by Professor Hewlett as undoubtedly polluted, and he also stated that he had isolated a bacillus which was, so far as his tests went up to the time of writing, indistinguishable from the typhoid bacillus.

It is a curious fact that until the present year Wells has been free from enteric fever for some years, or possibly we should have heard of these layings before now. As Dr. Nash pointed out in his report, "the danger is of course accentuated when typhoid fever exists in the town." After his visit to Wells the county medical officer of health on

August 14th communicated with Dr. Pattin to tell him that the mussels at Wells were distinctly polluted. Acting on this Dr. Pattin had independent bacteriological examinations made of a sample of mussels from Wells purchased in Norwich. These were reported as containing a large number of bacilli coli. The topographical and bacteriological investigations confirming Dr. Pattin's epidemiological inquiries, he forthwith adopted the strong measures of seizing and destroying several bags of mussels brought into Norwich from Wells. At the same time he issued circulars of warning against the consumption of shell-fish. We learn that this action has been rewarded by a marked reduction in the notifications of enteric fever in Norwich since the beginning of this month (September). This only confirms the experience of other towns where similar action has been taken, the most notable instances being perhaps Great Yarmouth and Southend-on-Sea. In the former town, after a series of years of epidemic enteric fever, the sale of mussels from the Yare was prohibited by the late medical officer of health in 1900 and the notifications of this disease immediately thereafter dropped. Thus, in 1901 there was a reduction in the number of notifications amounting to 30 per cent. below the monthly means of previous years, and in 1902 a still further reduction took place. The average yearly notifications of enteric fever in Great Yarmouth for the years 1897–1900 were 158, while in 1901 and 1902 the figures were 87 and 57 respectively. Still more striking are the Southend figures. From the annual reports of the medical officer of health we learn that in 1902 there was some connexion with shell-fish in at least 82 out of 105 cases of enteric fever. This led to an active campaign by Dr. Nash against polluted shell-fish, with the result that the morbidity rate of this disease in Southend, which had averaged 2·08 per 1000 of the population during the years 1899 to 1903, fell to an average of only 0·29, a reduction of over 90 per cent., during the years 1904 to 1907.

Epidemiological evidence up to the present bears out topographical inquiry and apparently inculpates as a source of enteric fever only such shell-fish as are exposed to pollution by *human* sewage. In a recent letter[1] Dr. Nash drew attention to the limitations of bacteriological evidence, which cannot be depended upon *alone* (unless, indeed, the typhoid bacillus itself be found). *Topographical* investigation of the source is essential rightly to estimate the degree of danger and the necessary consequential steps in dealing with any shell-fish under suspicion. In the present instance it is matter for congratulation that the Wells urban district council acted promptly in forbidding under penalty the sale of the polluted mussels and that the Norwich press expresses on behalf of the public thanks to both the county medical officer of health and the medical officer of health of Norwich for their conjoint action in discovering and promptly dealing with so subtle a danger to the public health.

MEDICINE AND THE LAW.

The Protection of Infant Life: the Case of a Herbalist at Bootle.

IN THE LANCET of May 23rd, p. 1507, comment was made upon a Bill designed to secure the punishment of those who "shall wilfully destroy the life of a child during the birth thereof and before the same shall have been fully born," persons who now go scot free. Had this measure been in force it would very possibly have found useful application in a case investigated at an inquest at Bootle during last August. The mother, a young unmarried woman, gave birth to a child, her second, at the house of a man named Birks who had described himself as a herbalist during a residence of five years at Bootle and who before he went there had been a window-cleaner. According to the woman's story her child was born at five and a half months, and just before the birth took place she had left her situation and gone to the house of Birks. She also swore that the child was born when she was alone during the night, but that Birks came into the room in consequence of her moaning and assisted her. He told a similar tale, and declared that when he arrived at the bedside he found the child dead and merely assisted the mother. He then proceeded to make arrangements for its burial with an undertaker who suspected that something was wrong and ultimately informed the police. In addition to conversation of an extremely suggestive character with the undertaker's manager, related by him in the witness-box, Birks provided a sham certificate that the child was stillborn, written out for him by a woman with whom he was cohabiting, to which were appended the fictitious name and address of a non-existent nurse. The evidence of Mr. R. R. Sittt, police surgeon to the borough, based on post-mortem examination, was that the child was fully developed, weighing 7 pounds 6 ounces and being 20 inches in length, and that, in his opinion, it had been suffocated either immediately after birth or just before complete delivery. He was asked whether he was able to say positively that the child had been alive when it was entirely delivered from the mother, and, as will readily be understood, he was in the circumstances unable to speak with absolute certainty as to this, although he told the jury that after hearing the evidence he thought it highly probable that the child was fully born before any suffocation took place. The undertaker's manager deposed that he had had handed to him by Birks during the three years of his employment two children supposed to have been those of Birks himself and to have been stillborn and about six others also "stillborn" on the recommendation of Birks, but from houses other than his. A considerable amount of evidence was given, but, as will be seen from the above short statement of the more material facts, there was a difficulty with regard to proof of "separate existence" and an absence of evidence connecting Birks with the death of the child, so that after tendering a verdict incriminating the herbalist, which the coroner refused to accept, the jury eventually found that the child had a separate existence and that death was brought about by suffocation, but whether by the criminal act of George Birks was not conclusively proved. They recommended that he and the woman mentioned, who said she was his wife, which he denied, should be censured and with this recommendation the coroner, Mr. J. S. Brighouse, complied. As a sequel to the case Birks was prosecuted at the Bootle police court for failing to notify the medical officer of health as to the birth of the child under the Notification of Births Act, 1907, and a fine of 20s. with costs was inflicted upon him. Apparently no other charge could have been brought against him with any likelihood of success. Even under the law as projected by the Bill referred to it will not be easy to obtain convictions in cases in which, as a rule, only two persons know what actually took place, both of whom are equally interested in the concealment of the truth, but the fact that a charge may be made and the knowledge that in such an event one of the parties concerned may betray the other should act as a deterrent and contribute to the saving of lives now taken with indifference and impunity.

Prosecution of a Medical Practitioner under the Notification of Births Act.

The Notification of Births Act, 1907, has been adopted at Burslem and a medical man, Mr. W. T. Shields, has been the first victim of the law which imposes upon any person in attendance upon the mother at the time of, or within six hours after, the birth of a child the duty of giving notice in writing to the medical officer of health of the district. Mr. Shields explained through his advocate that he had no intention of breaking the law but that he had done so through an oversight, and, in fact, he had given information that the birth had taken place, as a sanitary inspector admitted in his evidence, but he had done so by means of the telephone and not within the prescribed period. The Burslem bench convicted Mr. Shields, fining him 5s. with costs. It will be remembered that THE LANCET, while welcoming the principles and object of the Act,[1] protested against the imposition upon the medical profession of a public duty subject to a penalty for its non-performance and without any compensation for the trouble and responsibility involved, and it will also be remembered that an amendment dealing with the matter was got rid of in the House of Commons by an exercise of Parliamentary tactics of a regrettable character. To this Sir John Batty Tuke called attention in THE LANCET of August 31st, 1907, p. 672. Other summonses under the same Act were heard at

[1] THE LANCET, Sept. 12th, p. 836.

[1] See THE LANCET, Sept. 7th, 1907, p. 717.

Burslem on the same day as that against Mr. Shields, two of which were against a midwife. One of the cases in respect of which she was prosecuted appears to have been attended also by Mr. Shields, for the midwife urged unsuccessfully in her own defence that she had thought that he would give the prescribed notice. Why this defence was not accepted by the bench is not clear from the report before us but it is worth noting that in the subsection which defines the penalty for failing to notify a birth it is provided that a person who fails to give notice shall not be liable "if he satisfies the court that he had reasonable grounds to believe that notice had been duly given by some other person." Possibly, in order to establish this defence the person summoned should be in a position to swear that someone whom he might reasonably believe told him that the notice had actually and in fact been given.

Looking Back.

FROM

THE LANCET, *SATURDAY*, Sept. 25th, 1830.

ADDRESS.[1]

IN addressing a few prefatory remarks to the readers of THE LANCET,[2] on commencing the Volumes for another medical year, it is not necessary that we should enlarge upon the subjects which are usually embraced in such essays. Instead of launching into bombastic promises for the future, we have rather to direct attention to the past; and, instead of appearing before the profession as untried men, we stand forward as journalists who have waged a constant war against the unprincipled abettors of public abuses. In our first address to the profession, we took the opportunity of briefly descanting upon the advantages which must arise to the community from the publication of the lectures that were delivered, and of the cases that were treated, in our great national hospitals. The success—the extraordinary, the unparalleled success—of THE LANCET, shows that our opinions on this question were founded upon a knowledge of the wants of the profession in a particular branch of medical information,—of the true theory of medical science,—and of the best interests of the public. Next to life itself, nothing can be so valuable to man as health, and to this nothing can be so conducive as the ardent cultivation of the science of medicine. Having at an early period observed the vast sources of knowledge which were hidden from public view within the walls of our national institutions, we thought that the press might become available for rendering to practitioners in the most distant parts of the globe, some portion of the practical experience which, for so many succeeding ages, had been enjoyed only by the favoured few;—by individuals who had ever appeared more anxious to embitter or destroy the cup of knowledge, than to pass it with a friendly and cheerful hand around the circle of thirsty inquirers who, had they been permitted, would have diffused its benign influence, like the dew-drops of heaven, over all mankind.

The Lectures and Cases of our public hospitals, we always regarded as the two great sources of medical information, and it was to the publication of these that, from the first, we directed our most especial attention. If the Lectures were sound in principle,—drawn from practical knowledge, and enriched by the ever-sure results of experience,—it is evident that their diffusion amongst practitioners, and especially amongst the junior members of the profession in all parts of the globe, could not fail to produce universal good. On the other hand, if the Lectures were unsound in principle, deficient in practical knowledge, devoid of facts derived from the personal experience of the Lecturer,—we considered that publicity would prove the best corrective; that by this salutary and effectual check, the pupils would be spared the pain, labour, and expense, of listening to doctrines that were worthless, or even fallacious, and that the public would be protected against the evils which, it is feared, have but too frequently arisen from the propagation of crude, ill-digested, and dangerous medical theories.

[1] The first two paragraphs only have been transcribed.

[2] THE LANCET at that time considered its medical year to begin with the last number in September of each year or the first number in October and started with an account of the medical and surgical schools of London. The second volume of the medical year commenced with the first weekly number of THE LANCET issued in the following April.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Borough of Cambridge.—In his current annual report Dr. Duncan Forbes estimates the population of Cambridge at 39,924 and he furnishes two charts showing that the birth-rate of the town since 1875 has decreased more rapidly than the death-rate. There was during 1907 considerable discussion in Cambridge concerning the adoption of the Notification of Births Act. It seems that the town council proposed to adopt the Act, but that the opposition of a representative section of the medical profession was so strong that the adoption of this measure was not proceeded with. The practitioners opposing the measure regarded notification as a breach of confidence, and incidentally they were indisposed to assist owing to the fact that the legislature had imposed the duty of notification upon the practitioner without any provision for recompensing him for his trouble. On the other hand, the local practitioners were, they stated, willing to do all in their power to promote voluntary notification and the local midwives adopted the same attitude. The matter appears to be now in abeyance. Dr. Forbes gives a short summary of the circumstances connected with the water-supply of Cambridge. This is a somewhat delicate matter and Dr. Forbes wisely refrains from comment except to express a hope that the Local Government Board inspectors who are investigating the subject will be able "to recommend some action which will remove the possibility, even if it be remote, of dangerous pollution of the water-supply." We entirely endorse this view. It would be deplorable were jealousies or susceptibilities of any nature allowed to stand in the way of removing every shred of suspicion from the water. The voluntary notification of pulmonary tuberculosis was adopted in the spring of 1907, the Cambridge Medical Society having unanimously urged the desirability of this measure, and in January, 1908, the council decided to admit a few advanced cases of this disease into the isolation hospital.

City of Capetown.—Dr. A. S. Arenhold, the acting medical officer of health of this city of the empire, gives its population at nearly 78,000. The birth-rate for 1907 was 20·63 per 1000 for Europeans and 52·74 for coloured persons. The percentage of illegitimate to total births was for Europeans 7·67 and for coloured persons 25·26. In some portions of the city the birth-rate amongst the coloured population reached the enormous rate of 73·20 per 1000. The corrected death-rate for Europeans was 12·15 per 1000, the lowest on record, while for the coloured population the corrected rate was 37·00. The infantile mortality of the European children was 92·1, and for coloured children 211·3, per 1000 births. There is a lady visitor who visits most of the houses when children have been born and gives advice. The mortality caused by measles amongst the coloured population seems to be enormous as compared with that of the white population and the same statement applies to diarrhœa. The case incidence of diphtheria is apparently greater upon the white than upon the coloured population, but the fatality rate is much heavier amongst the coloured. Similarly the case-incidence of scarlet fever is much higher amongst the whites, the fatality rate being low in both groups. The death-rate from tuberculosis was 1·74 amongst the whites and 7·56 (per 1000) amongst the coloured. Compulsory notification of pulmonary tuberculossis is in force in the city but the medical officer adds that the notified cases are but a fraction of the total number. He adds that "the housing question and the betterment of hygienic conditions of life are of the greatest importance in the treatment and prevention of the disease; but unless all insanitary hovels are made to disappear in towns sanatorial treatment cannot benefit the working and poorer classes."

County Borough of Bolton.—The voluntary notification of pulmonary tuberculosis, which was commenced in Bolton in 1902, was followed in 1905 by compulsory notification, the Sheffield clause to the effect that no persons suffering from this disease should be subject to the penal sections of the

Public Health Acts being inserted in the local Act legalising the measure. Since the beginning of voluntary notification 872 cases have been notified and during the whole of this period, 1902–07, there have been multiple cases in 25 houses only. The corporation has now secured four additional beds at Meathop sanatorium in Westmorland, this making eight beds in all. Of the total 15 cases discharged from the sanatorium between July, 1906, and the end of 1907, three are regarded as "cured," four as fit for light work, three as improved in general health but unfit for light work, and five show no improvement.

County Borough of Warrington.—Dr. J. C. Hibbert, the successor to the late medical officer of health, treads cautiously in his first annual report, but he has no hesitation in condemning the pail-closet system which at present obtains and in advocating a water-carriage system. As he observes, it is a blot on modern-day sanitation that the majority of houses should have a collection of human excreta hard by their back-doors and polluting the air of their own larders. It is remarkable that in the north of England the people suffer these accumulations of excrement and refuse in much more docile fashion than would be the case in the south, although there is no doubt that a change for the better is steadily passing northwards. In discussing the subject of tuberculosis Dr. Hibbert fully recognises the impossibility of isolating notified cases of pulmonary tuberculosis, but he thinks, nevertheless, that much may be done educationally without interfering with the liberty of the sufferers. He proposes that the small-pox hospital when not needed for small-pox should be used for an educational course of instruction and also for accommodating such advanced cases as cannot be properly cared for in their own homes. He thinks, too, that the isolation hospital for ordinary infectious diseases might in part be utilised for educational purposes. There is no doubt that if the patients did not contract other diseases there would be advantage to them in this temporary sojourn. There would be some improvement in their condition and by being taught how to conduct their lives they might live longer than would otherwise be the case. As regards the spread of the disease through tuberculous milk Dr. Hibbert deplores the slowness of the machinery at present available for stopping the supply of tuberculous milk, even with the help of the powers bestowed by the Liverpool milk clauses, owing largely to the long interval necessary to demonstrate the presence or absence of the tubercle bacillus. The Warrington town council seems, however, to have acted wisely in stopping the supply of milk on suspicion and compensating the farmer for the loss. But, as Dr. Hibbert observes, a tuberculous cow turned out of one cowshed may find its way into another and thus continue its supply of tuberculous milk. What is wanted is uniform systematic action all over the country and the same type of action is necessary with regard to the meat-supply. An abattoir is built in a town and all the animals slaughtered there are perhaps duly inspected, as well as the meat of such animals after slaughter. But in the meantime the meat of animals slaughtered elsewhere is introduced under very imperfect supervision.

The Borough of Wimbledon.—Mr. Evelyn Pocklington reports that during the year 1907 15 patients were found to be peeling from scarlet fever at the time when the medical attendant was called in, and he concludes that unrecognised cases of this disease are among the most potent causes of the spread of scarlet fever. Mr. Pocklington thinks that the Metropolitan Asylums Board is quite right in pressing for an inquiry as to the causes of scarlet fever and as to whether any further means can be taken to control the malady. He interprets the attitude of the Asylums Board as indicating that in its opinion notification and isolation have not had the desired effect of keeping the disease in control. During the year under review the medical officer presented a report to the local sanitary authority relative to the question of establishing a municipal milk depôt, but the council, after considering the report, decided that the establishment of such a depôt was not desirable at the present time. Apparently it is more in favour of promoting a pure untreated milk-supply.

County Borough of Ipswich.—Dr. A. M. N. Pringle gives the population of this East Anglian town at nearly 73,000, and the increase during the last intercensal period has been made up in no inconsiderable degree by immigrants. He also sets out the death-rate figures since 1840 and these show, approximately speaking, a fall from 23 to 15 per 1000. During 1907 14·6 per cent. of all the deaths registered in the borough occurred in institutions, there having been, as in many other places, an increasing use made of public institutions during recent years. In Ipswich during the quinquennium ending 1898 only 9·6 per cent. of the total deaths took place in institutions. Dr. Pringle furnishes a good illustration of the manner in which scarlet fever spreads and, incidentally, of the reason why isolation hospitals, dealing as they do with recognised cases alone, have produced less effect in promoting the control of scarlet fever than was anticipated by their founders. A child was treated for a mild attack of sore-throat and three weeks afterwards the child returned to school, where it remained 10 days, after which the mother noticed that the child's hands were peeling. While the child was at home, and presumably before it commenced to peel, it played with several companions in the street and at home, and four of them developed scarlet fever. Two of these cases were at once recognised, but the remaining two were not diagnosed until three and five weeks respectively after attack, and each of these cases infected another member of the family. Here then was an unrecognised case responsible for at least six other cases. Two of the nurses at the isolation hospital contracted enteric fever and in nine cases the medical officer of health attributed infection to the consumption of cockles taken from the river Orwell, all the cases occurring at about the same time—i.e., from the middle of June to the end of the first week in July. The best attested group of cases is the following. Five persons out of a family of six partook of cockles and one was attacked with diarrhœa and vomiting on the next day, complete recovery rapidly ensuing. That member of the family who did not eat cockles—a child, aged six years—remained well. Some three weeks afterwards two of the family were removed to hospital with enteric fever and both yielded Widal's reaction. Two other members of the family also yielded typical Widal's reaction and they, too, were removed; the remaining two members, the child who ate no cockles and the member who had vomiting and diarrhœa, had their blood examined with negative results. At the same time two other cases from another town were taken to hospital with enteric fever and both had eaten cockles. No cases during the remainder of the year could be traced to cockles. The series is an interesting one and we agree that in all probability the cockles were the cause of the disease. As a result of the outbreak posters were exhibited in the district and we believe that similar precautions were taken after an outbreak described by the late medical officer of health which was also ascribed to shellfish taken from the Orwell. Dr. Pringle is hopeful as regards the future of tuberculosis. The disease has, he points out, fallen 50 per cent. during the last 50 years without any special efforts, and he thinks that it is well within the realms of possibility that the disease will share the same fate that has overtaken such diseases as typhus fever and relapsing fever and will practically disappear. He regards the infectivity of the disease as low and not to be ranked with scarlet fever and diphtheria. The public have, in his opinion, arrived at a totally erroneous conception of the degree of infectivity with the result that the ignorant are likely to convert the patient into a social pariah. If progress against the disease is to be maintained the sanitary authority of Ipswich must, he says, wage increasing warfare against the whole of the conditions summed up in the expression "insanitary property."

The Municipality of Shanghai.—The frontispiece of Dr. A. Stanley's annual report is the reproduction of a photograph of the interior of the municipal laboratory, an institution which is doing admirable work in Shanghai. We have already noticed certain aspects of this report but we desire now to draw attention to other points of interest. Some of the figures as regards disease are instructive. For example, small-pox during 1907 claimed 21 deaths among the foreign population and 863 amongst the Chinese. Dr. Stanley states that the Chinese are beginning to appreciate the benefits of vaccination as opposed to inoculation, which they have practised, he adds, with little benefit for hundreds of years. Apparently inoculation is still not illegal in Shanghai and it would be of interest to students of the vaccination question if Dr. Stanley would tell us something as to

the inoculation procedure and as to the reasons why no good results have accrued therefrom. We imagine that it would be difficult to procure trustworthy statistics as regards the fatality rate of inoculated small-pox, but it would be instructive could some data be given as well as information relative to the spread or non-spread of small-pox through inoculation. Dr. Stanley adopts apparently as his standard of successful vaccination repetition of the process until it no longer takes, or, rather, he states that vaccination repeated until it no longer takes always prevents small-pox, and he expresses the opinion that there is so much small-pox in Shanghai that vaccination should be repeated until it no longer takes. He thinks that, as the Chinese practised inoculation of mild small-pox as a protection against severe small-pox long before the days of Jenner, vaccination will be readily embraced by them. As many as 1418 vaccinations among Chinese and indigent foreigners were carried out during the year. There were 18 deaths from cholera amongst foreigners and 655 among Chinese, and Dr. Stanley appears to consider that infected food is a very common source of the disease and that a common agency through which the food is infected is the fly. There were 57 cases of enteric fever among the foreigners and it is thought that the method of growing oysters near Ningpo for the Shanghai market may be responsible for some of the disease if the oysters are eaten raw. It is a matter of interest in connexion with the geographical distribution of Malta fever to note that two deaths certified as due to this disease occurred in Shanghai during 1907, and it seems probable that some of the cases certified as being enteric fever are cases of Malta fever. We are not told whether there are goats used as sources of milk in Shanghai and, if so, to what variety of goats they belong. We have still much to learn as to the distribution and etiology of Malta fever. Among the usefu duties performed by the municipal laboratory is the examination of mosquitoes for each of the eight sanitary districts and the discovery of yellow fever bearing mosquitoes is a matter of importance in relation to the prospective opening of the Panama Canal, as it is conceivable that the Shanghai mosquitoes may become the carriers of yellow fever. Probably, however, the work now being carried out by the Americans between Panama and Colon in the clearance of swamp and undergrowth will reduce these risks to a minimum. There are occasionally rabid dogs in Shanghai, notwithstanding the muzzling order and the licensing of dogs, and the virus of the Shanghai disease seems more virulent than that of Europe, the incubation period being shorter. Among the prisoners in the Souza prison there was in 1907 an outbreak of relapsing fever, there being 43 cases and two deaths. There was also cattle plague amongst cattle in the dairies. Shanghai has its municipal abattoir, but during the year 1907 no animal was rejected on account of tuberculosis, evidence, Dr. Stanley thinks, of the extreme rarity of bovine tuberculosis among the local cattle. Good meat is stamped "Killed in municipal slaughter-house," and no meat is allowed to be sold from any shop or taken into the settlement unless it bears a municipal stamp. Meat inferior in quality but free from disease is passed for sale on stalls only and marked "second quality." Would that English towns would follow this Shanghai example.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8144 births and 4337 deaths were registered during the week ending Sept. 19th. The annual rate of mortality in these towns, which had steadily declined from 15·8 to 14·2 per 1000 in the four preceding weeks, further fell to 13·9 during the week under notice. During the first 12 weeks of the current quarter the annual death-rate in these towns averaged 13·4 per 1000, and in London the mean rate in the same period did not exceed 12·5. The lowest annual death-rates in these 76 towns during the week under notice were 3·7 in Bournemouth, 4·5 in West Bromwich, 6·7 in Hornsey, and 6·9 in East Ham; the rates in the other towns ranged upwards, however, to 19·6 in Grimsby and in Merthyr Tydfil, 20·9 in Wigan, 21·9 in Stockport, and 23·5 in Great Yarmouth. In London the death-rate during the week was 13·9 per 1000. The 4337 deaths from all causes in the 76 towns showed a further decline of 96 from the decreasing numbers in recent weeks, and included 677 which were referred to the principal epidemic diseases, against 1343, 1067, and 840 in the three preceding weeks; of these 677 deaths, 507 resulted from diarrhœa, 43 from diphtheria, 38 from whooping-cough, 36 from measles, 28 from scarlet fever, and 25 from "fever" (principally enteric), but not one from small-pox. The deaths referred to these epidemic diseases during the week were equal to an annual rate of 2·2 per 1000, against 4·3, 3·4, and 2·7 in the three preceding weeks; in London the death-rate from these diseases did not exceed 2·1. No death from any of these epidemic diseases was registered last week in Bournemouth or in Hastings, whereas the annual death-rates therefrom ranged upwards in the other large towns to 5·3 per 1000 in Rochdale, 5·6 in St. Helens, 6·2 in Hull, and 7·6 in Stockport. The deaths attributed to diarrhœa in the 76 towns, which had declined in the four preceding weeks from 1134 to 668, further fell to 507 in the week under notice; the highest death-rates last week from this cause were 4·8 in Birkenhead, 5·0 in St. Helens, 5·2 in Hull, and 6·6 in Stockport. The 43 deaths referred to diphtheria showed a further increase upon recent weekly numbers, and caused the highest death-rates, 1·2 in Derby and 1·3 in Reading. The 38 fatal cases of whooping-cough showed a marked decline, and were fewer than in any previous week of this year. The 36 deaths from measles somewhat exceeded the low number in the previous week; this disease caused a death-rate last week equal to 1·2 in Rochdale and to 1·5 in Oldham. The 28 fatal cases of scarlet fever included nine in London and its suburban districts, three in Birmingham and King's Norton, eight in Liverpool and Bootle, and three in Manchester and Salford. The 25 deaths referred to "fever" showed a decline of nine from the number in the previous week; the two fatal cases in Wigan were equal to an annual rate of 1·2 per 1000. The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had been 2855 and 3005 in the two preceding weeks, had further risen to 3285 on Sept. 19th; the number of new cases of this disease admitted to these hospitals during the week under notice were 625, against 377, 395, and 472 in the three previous weeks. The deaths in London referred to pneumonia and other diseases of the respiratory organs, which had been 102 and 124 in the two preceding weeks, further rose to 137 last week, but were nine below the corrected average number in the corresponding week of the five years 1903–07. The causes of 42, or 1·0 per cent., of the deaths registered in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were again duly certified in Manchester, Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Leicester, and in 47 other smaller towns during the week under notice; eight uncertified causes of death were, however, registered during the week in Birmingham, six in Liverpool, four in Sheffield, three in Preston, and two in South Shields.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 15·4, 14·8, and 13·7 per 1000 in the three preceding weeks, rose again to 14·4 in the week ending Sept. 19th. During the first 12 weeks of the current quarter the annual death-rate in these eight towns averaged 13·8 per 1000 and exceeded by 0·4 the mean rate during the same period in the 76 English towns. Among the eight Scotch towns the death-rate during the week under notice ranged from 7·4 and 10·0 in Perth and Aberdeen to 16·1 in Dundee and 16·6 in Glasgow. The 508 deaths in the eight towns showed an increase of 24 upon the low number in the previous week, and included 65 which were referred to the principal epidemic diseases, against numbers declining from 107 to 87 in the four preceding weeks; of these 65 deaths, 35 resulted from diarrhœa, ten from whooping-cough, nine from "fever," seven from diphtheria, and two each from measles and scarlet fever, but not one from small-pox. These 65 deaths were equal to an annual rate of 1·8 per 1000, which was 0·4 below the mean rate from the same diseases in the 76 large English towns. The deaths attributed to diarrhœa in the eight Scotch towns, which had ranged from 63 to 52 in the four preceding weeks,

fell to 35 in the week under notice; of these, 27 occurred in Glasgow and two both in Aberdeen and in Paisley. The 10 fatal cases of whooping-cough, of which nine were recorded in Glasgow, showed a marked decline from recent weekly numbers. The deaths referred to "fever," however, which had been but four and five in the two previous weeks, further rose last week to nine, including five fatal cases of cerebro-spinal fever, three of enteric fever, and one of typhus fever; five of the nine fatal cases of "fever" occurred in Glasgow and one each in Edinburgh, Dundee, Paisley, and Greenock. The seven deaths from diphtheria exceeded recent weekly numbers, and included six in Glasgow and one in Dundee. The fatal cases both of measles and of scarlet fever were below the average. The deaths referred to diseases of the respiratory organs in the eight towns, which had been 75, 57, and 44 in the three preceding weeks, rose again to 73 in the week under notice, and exceeded by five the number returned in these towns in the corresponding week of last year. The causes of 13, or 2·6 per cent., of the deaths registered in the eight towns during the week were not certified; in the 76 English towns during the same week the proportion of uncertified causes of death did not exceed 1·0 per cent.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had declined in the four preceding weeks from 24·1 to 20·6 per 1000, further fell to 19·3 in the week ending Sept. 19th. During the first 12 weeks of the current quarter the death-rate in Dublin averaged, however, 19·8 per 1000; the mean rate during the same period did not exceed 12·5 in London and 13·0 in Edinburgh. The 146 deaths of Dublin residents during the week under notice showed a further decline of ten from the high numbers returned in recent weeks, and included 21 which were referred to the principal epidemic diseases, against numbers declining from 44 to 28 in the four preceding weeks. These 21 deaths were equal to an annual rate of 2·8 per 1000; the rate during the week from the same diseases did not exceed 2·1 in London and 0·4 in Edinburgh. Of the 21 deaths from these epidemic diseases in Dublin during the week under notice, 16 resulted from diarrhœa, three from measles, and one each from whooping-cough and "fever," but not one from scarlet fever, diphtheria, or small-pox. The deaths attributed to diarrhœa, which had ranged from 39 to 20 in the four preceding weeks, further declined last week to 16. The three fatal cases of measles also showed a marked decline from recent weekly numbers. The 146 deaths from all causes during the week included 31 of infants under one year of age and 36 of persons aged upwards of 60 years; the deaths of infants showed a further considerable decline, while those of elderly persons were somewhat more numerous. Four inquest cases and four deaths from violence were registered; and 56, or 38·3 per cent., of the deaths occurred in public institutions. The causes of two, or 1·4 per cent., of the deaths registered during the week were not certified; in London the causes of all but three of the 1280 registered deaths were duly certified, while in Edinburgh the proportion of uncertified causes of death was 2·6 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Staff-Surgeons: W. W. Keir to the *Albemarle;* and W. E. Gribbell to the *Shearwater*, additional, and on recommissioning. Surgeons: A. J. MacDiarmid to the *Indomitable;* and D. G. Addison-Scott to the Portsmouth Division R.M.L.I.

ARMY MEDICAL SERVICE.

Colonel Charles A. Webb retires on retired pay (dated Sept. 19th, 1908).

Lieutenant-Colonel John R. Dodd, from the Royal Army Medical Corps, to be Colonel, vice J. J. La Vettée de la Dubeterre Morris (retired) (dated Sept. 9th, 1908).

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel Arthur M. Davies is placed on retired pay (dated Sept. 17th, 1908).

Major M. P. C. Holt, D.S.O., has been appointed to the medical charge of the troops who will embark at Southampton on board the transport *Plassy* on Sept. 29th for Bombay. Captain J. W. West has been appointed to Dublin as specialist in operative surgery. Captain J. Tobin, from the Northern Command, has been appointed to the Irish Command, to take charge of the Military Families' Hospital at the Curragh. Major M. P. Corkery has been appointed medical officer in charge of the Military Families' Hospital at Woolwich.

INDIAN MEDICAL SERVICE.

The King has approved of the following promotions among officers of the Indian Medical Service:—Lieutenant to be Captain (dated Feb. 1st, 1908): Hugh Clive Buckley. To be Lieutenants (dated Feb. 1st, 1908): Robert Knowles, Wilfrid Edward Brierley, James Burne Lapsley, James Alfred Shorten, Robert Beresford Seymour Sewell, Charles Henry Fielding, William Linton Watson, Francis Romney Coppinger, Arthur de Courcy Cranstoun Charles, Wilfrid James Simpson, Frederick Stevenson, James William Barnett, Stephen Harold West, Madan Lal Puri, Satya Charan Pal, and Reginald Stephen Townsend.

The King has approved of the retirement of the following officers:—Colonel Thomas James Hackett Wilkins (dated June 30th, 1908); Lieutenant-Colonel Robert Pemberton (dated July 1st, 1908); Lieutenant-Colonel George Henry Bull (dated July 1st, 1908); Lieutenant-Colonel Henry Armstrong (dated June 30th, 1908); Lieutenant-Colonel Frederick Fitzgerald MacCartie, C.I.E. (dated June 30th, 1908); and Lieutenant-Colonel John William Unthank Macnamara (dated July 12th, 1908).

TERRITORIAL FORCE.

Royal Army Medical Corps.

The undermentioned officers, from the Adjutancies of units of the Royal Army Medical Corps (Volunteers), to be Adjutants of Schools of Instruction for the residue unexpired of their tenures (dated April 1st, 1908): Major Alexander James MacDougall, Captain Harold Percy Waller Barrow, Captain Edgar Thomas Inkson, V.C., and Captain Langford Newman Lloyd, D.S.O.

DEATHS IN THE SERVICES.

Brigade-Surgeon Robert Lidderdale, late Bengal Medical Service, on Sept. 9th, at Torquay, aged 73 years. He entered the service in 1858, was promoted surgeon in 1870, surgeon-major in 1873, and brigade-surgeon in 1885. He was appointed superintendent of the Vaccination Department for Bengal in 1869 and sanitary commissioner for the Dependency in April, 1880. He retired in 1889.

IMPERIAL YEOMANRY.

Berks: Surgeon-Major John H. Waters resigns his commission, with permission to retain his rank and to wear the prescribed uniform (dated March 31st, 1908).

VOLUNTEER CORPS.

Rifle: 1st Volunteer Battalion, The Northumberland Fusiliers: Surgeon-Lieutenant Thomas Woodman resigns his commission (dated March 31st, 1908). 4th Volunteer Battalion, The Royal Fusiliers (City of London Regiment): The undermentioned officer resigns his commission (dated March 31st, 1908:—Surgeon-Lieutenant Henry C. Nicholls. 2nd (Berwickshire) Volunteer Battalion, The King's Own Scottish Borderers: Surgeon-Lieutenant James Marr resigns his commission (dated March 31st, 1908). 3rd (The Buchan) Volunteer Battalion, The Gordon Highlanders: Surgeon-Lieutenant-Colonel Andrew Mitchell is granted the honorary rank of Surgeon-Colonel (dated March 30th, 1908). The undermentioned officer resigns his commission, with permission to retain his rank and to wear the prescribed uniform (dated March 31st, 1908): Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel Andrew Mitchell. 26th Middlesex (Cyclist) Voluntary Rifle Corps: The undermentioned officer resigns his commission (dated March 31st, 1908): Surgeon-Captain Percy J. Edmunds.

WESTON-SUPER-MARE HOSPITAL.—The annual house-to-house collection by members of the local friendly societies, which was recently held at Weston-super-Mare, resulted in £52 being raised for the funds of the Weston-super-Mare Hospital.

Correspondence.

"Audi alteram partem."

A FOREIGN BODY IN THE STOMACH FOR SIX MONTHS.

To the Editor of THE LANCET.

SIR,—An infant of eight months old was brought to me this evening with the following story. When eight weeks old the child had swallowed an indiarubber teat; the mother gave her a dose of castor oil and watched the motions to see if the teat would pass through, but found no signs of its doing so. The child has been in good health and has not been seen by a doctor until a fortnight ago, when I saw her for a slight bronchial attack. This morning the child had breakfast of warm milk with a little bread crumbs in it and soon after vomited and in the vomit was the teat inclosed herewith. The child is a healthy-looking, well-nourished baby and seems perfectly well, so if the story is true the presence in the stomach of a large piece of vulcanised rubber has given rise to no symptoms and has not affected the child's growth or strength in any way. I am, Sir, yours faithfully,

LAUNCELOT ARCHER.

Vincent-square, Westminster, Sept. 18th, 1908.

*** We have received the teat which is in two pieces and is stained slightly yellow.—ED. L.

THE MEDICAL DIRECTORY.

To the Editor of THE LANCET.

SIR,—May we ask for the courtesy of your columns to announce our intention of reverting in the 1909 issue to the old plan upon which the "Local List" for London was arranged, namely the division of Inner London into streets in preference to districts. We thank your correspondent "Non Œdipus" and other gentlemen who have written to us for the expression of their views on this subject.

We are, Sir, yours faithfully,

J. & A. CHURCHILL.

Great Marlborough-street, London, W., Sept. 18th, 1908.

THE MEDICAL ASPECT OF GASTRO-ENTEROSTOMY, BASED ON 128 OPERATIONS AT THE MANCHESTER ROYAL INFIRMARY.

To the Editor of THE LANCET.

SIR,—It is difficult to thank Dr. Leech adequately for the temperate and judicial analysis of the cases in which gastro-enterostomy has been performed in the Manchester Royal Infirmary, published in your issue of Sept. 19th. I do not think any surgeon will feel disposed to cavil at the conclusions at which he has arrived, especially that conclusion which has reference to the disastrous consequences of delay. But there is one point telling strongly in favour of early operation which Dr. Leech has not mentioned, and which certainly deserves to be taken into consideration in weighing the merits or the demerits of this operation. There were 46 cases of malignant disease. In one of these the growth was a secondary one; in two others the situation is not mentioned. These may be left upon one side. In 40 out of 43 the growth was at the pylorus—the part of the stomach in which chronic ulcer is most common. In what proportion of these 40 cases did the growth originate at the site of an old ulcer, which had failed to heal under medical treatment and which would at least have had a chance of healing if timely gastro-enterostomy had been done?

It is notorious that in every part of the body, stomach included, carcinoma is especially prone to develop at the site of an old ulcer which is prevented from healing; and the identity of situation in such a large proportion of cases is most significant. It is not the least argument in favour of early gastro-enterostomy that, in addition to the relief it gives, it will, by enabling a chronic ulcer of the stomach to heal more readily, diminish the frequency of gastric carcinoma. I am, Sir, yours faithfully,

Wimpole-street, W., Sept. 20th, 1908. C. MANSELL MOULLIN.

THE PREVENTION OF TUBERCULOSIS (IRELAND) BILL.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Sept. 19th, p. 901, Dr. J. C. McWalter, writing in reference to the Prevention of Tuberculosis (Ireland) Bill, says: "Knowing what I do of the Irish people, I believe that the Compulsory Notification Clauses will excite so much suspicion and dread as effectually to undo any good result heretofore obtained from the tuberculosis campaign People simply will not go to a medical man if they think that by so doing they may be listed as tuberculous."

Now, Sir, while Dr. McWalter gives no evidence of any kind beyond his own individual opinion in support of such a prophetic view he totally ignores the following facts: 1. In places where there is compulsory notification (and here we are dealing with practical experience and not with mere theoretical opinion) no difficulty of this kind has arisen. If practical experience in Sheffield, Edinburgh, Bolton, and New York (where there are so many people from Ireland) has clearly demonstrated that there are no serious objections to compulsory notification, why should there be any in Ireland? 2. At the meetings held in connexion with the Tuberculosis Exhibition all over Ireland resolutions were passed by the people of Ireland calling upon the Government to legislate upon certain points regarded as essential and one of these was the compulsory notification of tuberculosis. Then a deputation of almost everybody who could speak with authority in Ireland on such a question waited on the Lord Lieutenant, the Chief Secretary, and the Vice-Chairman of the Department of Agriculture on Nov. 29th, 1907, asking that special legislation should be introduced without delay with the object of making it compulsory that all cases of pulmonary tuberculosis should be notified; and, finally, on August 27th, 1908, at a large conference of delegates summoned from all parts of Ireland, a resolution was carried with only two dissentients heartily approving of the principles of the Tuberculosis Prevention (Ireland) Bill and earnestly desiring to see it passed into law. Does Dr. McWalter really believe that the people who were at these meetings and on this deputation would have taken such a line of action had they for one moment imagined that the compulsory notification clauses would cause any annoyance, or that the people would object to them, or that they would impale for life persons notified? Ireland enjoys the unenviable notoriety of losing close upon 12,000 of her people every year from tuberculosis—that is, 15 per cent. of all the deaths in Ireland are from tuberculosis. Is this to continue or is she not to be allowed, if her people wish it, to take her position with those in the van in trying to get rid of a largely preventable disease?

Let us discuss this problem in a thoroughly scientific and practical way. I am, Sir, yours faithfully,

Belfast, Sept. 21st, 1908. JOHN BYERS.

A QUESTION OF SOBRIETY.

To the Editor of THE LANCET.

SIR,—The regret expressed by "M.D." at finding himself at variance with me seems to me uncalled for, for I cannot find anything in his account of himself or of his cousin that conflicts with the opinions I hold on the nature of drunkenness. Perhaps the account of my address, to which you courteously gave the hospitality of your columns, was so much compressed as to be obscure. A full report will appear in the October number of the *Journal of Mental Science*, and if "M.D." will do me the honour to read it there, or in a copy which I shall be happy to send him on request, I am confident that he will find his criticism unnecessary. Few people have preached, more insistently than I have, the doctrine of the inescapable responsibility of every man for his own acts; and many a trouncing have I had from my colleagues for such preachments. That I should now be accused of supporting the opposite opinion is startling, and impels me to declare that the abstract of my address was

written before dinner—and, in any case, I, like "M.D.," am practically a teetotaller. I am, Sir, yours, &c.,

Wimpole-street, Sept. 21st, 1908. CHAS. MERCIER.

ON CHRONIC MORPHINISM AND ITS TREATMENT.

To the Editor of THE LANCET.

SIR,—The article which appeared in your issue of Sept. 12th on Chronic Morphinism by Professor Gamgee is highly instructive and is certainly the best contribution on that subject which I have read. Several theories have been propounded as to the cause of the distressing phenomena which follow abstinence from morphine in cases of chronic morphinism, but in my opinion Professor Gamgee's is by far the most sound. In regard to these symptoms and their treatment there are a few remarks I would like to make. During the last seven years I have treated for chronic morphinism 52 cases and therefore have some little knowledge of the subject. In regard to the symptoms that affect the nervous system I agree with Professor Gamgee, but in regard to the circulatory, respiratory, and gastro-intestinal my experience compels me to differ slightly. The intense cardiac dyspnœa which he speaks of I have not met with, except in one case where the patient had been taking 80 grains of morphine per day before coming to me, and it took six months before the drug was entirely stopped. In regard to the gastro-intestinal symptoms, nausea, vomiting, and gastro-intestinal catarrh, these I have not found common, and when they have arisen I have found no difficulty in treating them, except when the patient has been in the habit of taking the morphine by the mouth. Constipation is as a rule present while the patient is taking the drug, and this may persist for some time after the drug has been cut off; strong purgatives may have to be used whilst the patient is taking morphine, but it is unwise to give these when the morphine is stopped. Enemata and mild laxatives are safer methods, bismuth subnitrate may also be given; with careful management I have always found these symptoms disappear.

In regard to treatment Professor Gamgee designates the sudden withdrawal of the drug as the English method. I do not admit that this is the English method; it may be the method adopted by English asylums, but certainly not by the different sanatoriums or retreats which make the treatment of morphinism, narcomania, or inebriety their special branch of medicine. I myself have invariably treated chronic morphinism by the slow reduction method. Professor Gamgee gives the time of from six to ten weeks in effecting this. This as a rule is too short, the average time being 13 to 16 weeks, and I have had cases which have taken over 20 weeks before the drug was abolished so as to avoid severe suffering and mental distress. I am quite aware that there is such a thing as syringe mania, but I find it far more satisfactory to continue the use of the hypodermic syringe till the last dose is given and even afterwards, when only a saline solution is injected. Giving it by the mouth and leaving off the syringe I have found adds to my difficulties. In regard to the nervous system symptoms—(*a*) Insomnia. After the drug has been cut off there is no doubt insomnia is one of the commonest symptoms complained of by the patient. I agree with Professor Gamgee in finding veronal extremely useful but seven grains is of little use; double that dose is required as a rule to combat this symptom and this drug must be slowly reduced or else insomnia is apt to return. (*b*) Uncontrollable restlessness. This is by far the most common symptom and I think the most trying to the patient, the constant twitching of the legs or arms, or as Professor Gamgee more aptly calls it the "fidgets" in the extremities are very trying and distressing to the patient. I have used for the treatment of this with marked success a preparation containing acetanilide two grains, caffeinæ citras five grains, sod. bicarbonate three grains. This remedy has succeeded when everything else has failed. (*c*) Maniacal and suicidal symptoms are rare but delirium and delusions are common; these as a rule pass off with ordinary treatment.

Professor Gamgee does not lay sufficient stress on the danger of administering alcohol either when the quantity of the drug taken by the patient is being reduced or has been cut off. In my experience I find that alcohol aggravates all these symptoms, and I would like to add that after the patient has recovered alcohol as a beverage ought to be avoided. In nearly every case in which relapse has occurred, after having been successfully treated, I find that the use of alcohol started the craving for morphine.

I quite agree with Professor Gamgee in strongly condemning any attempt to cut off the patient suffering from chronic morphinism from the drug at once. It is almost criminal treatment, and I also agree with him that these patients should only be dealt with in a place where treatment can be thoroughly carried out—that is to say, where the hygiene is good, the air bracing, a proper nursing staff kept, and the patient is under the supervision of a medical man who has made a special study and has practical experience of this subject. Professor Gamgee does not refer to the after-treatment to prevent relapse. If patients, after their chronic morphinism is cured, would remain under supervision for a considerable time, say six to 12 months, there would be fewer relapses. A long period would not only give them time to build up their physical strength and establish their general health but would also give them more brain power in resisting temptation to resume their habit.

I am, Sir, yours faithfully,

JOHN Q. DONALD, L.R.C.P., L.R.C.S. Edin.,

Colinsburgh, Fife, N.B., Sept. 17th, 1908.

TO MEDICAL FREEMASONS.

To the Editor of THE LANCET.

SIR,—May I once again, through the medium of your widely read columns, appeal to medical men, and medical Freemasons in particular, for votes for the Masonic schools? At the forthcoming elections in October there is only one medical candidate for the Royal Masonic Institution for Boys, William Henry Collins, son of William C. G. Collins, formerly physician and surgeon, Bath. As there is no medical candidate for the Royal Masonic Institution for Girls votes for that institution can be exchanged and are equally valuable. Votes for either institution will be gratefully received and acknowledged by me.

I am, Sir, yours faithfully,

WILLIAM WILSON,

Secretary, St. Luke's Medical Lodge of Instruction.

184, Goldhawk-road, W.

RHUS TOXICODENDRON AND ARNICA.

To the Editor of THE LANCET.

SIR,—Your annotation on the subject of rhus toxicodendron in THE LANCET of Sept. 19th, p. 887, interested me, because during the last 12 months I have had under my care two cases of dermatitis which were caused by the climbing variety of this plant. Application of a lotion, containing acetate of lead and tincture of opium, gave so little relief that I resorted to a solution of picric acid (picric acid, grs. 4; sp. vini meth., min. 60; aq. destill., ad 1 oz.).

Some years ago I was called to see a woman who was suffering from a most severe form of dermatitis. She had sprained her wrist and her hostess, a keen amateur homœopath, had applied bandages soaked in arnica lotion, with the result that the patient's hands, wrists, and forearms were inflamed and covered with blisters. Not knowing an antidote for the local effects of arnica we decided to treat the case as a severe scald and used picric solution with very good result. The skin lesions produced by rhus toxicodendron and arnica resemble one another very closely, and the remedy which had acted well for arnica proved equally efficacious for rhus toxicodendron. The solution was applied in the form of compresses, where these could be easily kept in position by a light bandage, and to the parts where this was inconvenient the lotion was applied frequently with a very soft camel-hair brush. It quickly relieved the pain and hastened the healing of the blistered surfaces. The only drawback is its vivid yellow stain which takes a few days to fade away. Some chemists are unwilling to keep picric acid in stock because of its dangerous explosive properties; the solution, however, is perfectly harmless.

As for the therapeutic uses of rhus toxicodendron I have found it of some value in the treatment of that troublesome symptom, nocturnal incontinence of urine. I have given the tincture in five-minim doses, combined with nux vomica and buchu, to a number of young school boys who were suffering from this weakness. It has certainly failed in a few very

obstinate cases but, although continued over several months, I have never observed any toxic effects.

I am, Sir, yours faithfully,

Mansfield-street, W., Sept. 21st, 1908. H. LYON SMITH.

SPASTIC CONSTIPATION.

To the Editor of THE LANCET.

SIR,—In the annotation on Spastic Constipation, published in your last number, it is stated with truth that the condition has "not received the attention in this country which its frequency warrants." But Dr. Gustav Singer falls into a common error when he ascribes its recognition to Cherchevsky in 1883, as an excellent account of the condition was written half a century earlier by an Englishman. In 1830 John Howship, surgeon to St. George's Infirmary, London, published a small book of "Practical Remarks on the Discrimination and Successful Treatment of Spasmodic Stricture in the Colon, considered as an occasional cause of habitual confinement of the bowels." He describes how in some cases of constipation "the complaint does not so much consist in a defective power of contraction in the whole extent, as in a deficient freedom of relaxation in some one part of the intestinal canal." It should also be remembered that enterospasm, an important article on which was published by Dr. H. P. Hawkins in the *British Medical Journal* in January, 1906, is another name for the same condition, and that many people in England who are unfamiliar with the term "spastic constipation" are well aware of the comparative frequency of "enterospasm." I am, Sir, yours faithfully,

London, Sept. 23rd, 1908. ARTHUR F. HERTZ.

SOME DISCURSIVE REMARKS ON THE REARING OF CHILDREN IN LONDON.

(BY A SPECIAL CORRESPONDENT.)

I.

THE CARE OF INFANTS IN TOWNS.—CONTINENTAL SCHEMES.—THE CHELSEA KITCHENS.—THE ST. PANCRAS SCHOOL FOR MOTHERS.

THE schemes set on foot by public bodies and by private philanthropic workers to combat the sickness and especially the high rate of mortality which prevail among city-born children are now very numerous. It is much to the credit of the public opinion that it should be so, and it is good to know that all such schemes have had their starting point in the scientific, clinical, and statistical information supplied by medical men. The decreasing birth-rate of this country, coupled with an infantile mortality which, though good compared with that of the United States and many continental States, is still unduly high, has aroused those willing to do something more than to talk about race decadence to make some organised attempts to improve matters. Of all modes to check infant sickness and mortality the improvement of the milk-supply is, of course, the most obvious. Everyone has been able to see that the purer the milk-supply the better in every respect would be the health of mothers and children, whether we are talking of infants who are unfortunately not able to be breast-fed or of babies who have reached the normal age for an independent food-supply. Attention has therefore for a long time, though in no systematic way, been paid to the milk-supply of the young, and this with full knowledge that questions of housing and questions of parental ignorance were at least as important. For a clean milk-supply is a good deal wasted on a parent who does not know what to do with it and has nowhere to keep it. The workers in the cause of infant health have most of them felt that the housing of the poor was the biggest thing of all, but they saw also that if they withheld their efforts until this immense matter was dealt with there would be endless delay. But they saw that they could do much to combat the poverty and ignorance of many mothers of the lower class by systematic instruction in the treatment of their offspring, so as to help them to nourish their infants properly by suckling and to demonstrate to them that breast-feeding is the natural and most healthy manner in which to rear an infant. The object of writing these articles, which I have called "Discursive Remarks"—for they are no more—is to give the results of some personal observations of certain of the plans which have been adopted in London during the past few years to afford the children of the poor a fair opportunity of becoming physically useful citizens.

I will first describe the schemes now in working order in London to promote breast-feeding among poor mothers. The point here is what has been *done*—not what has been *written*. It is of no use at all to write in medical journals, and not much use to write in lay journals, advocating breast-feeding. A certain amount of public attention is aroused and some workers may thus be stimulated to action, but the poor are not themselves directly influenced by anything that is written on the subject. The very poor, speaking generally, do not read at all, or if they do they take no heed to advice on such matters from a printed page. The sole means of reaching their intelligence is to get into personal relations with them, so as to urge them by word of mouth to give their offspring fair play, while assisting them in a material manner to suckle their children and otherwise to bring them up in accordance with the main laws of health. But this is not always easy, as many enthusiastic workers have found. There have been narrow and intolerant persons among the visitors of the poor and to win the confidence of those who have suffered from the Jellybys is by no means an easy task. Moreover, it is natural for self-respecting citizens to be jealous of outside interference with their domestic affairs and to resent the invasion of their homes by strangers, while it must be remembered that all mothers who are injudicious or ignorant are not necessarily wastrels. Negotiations to assist the mothers must be conducted with discretion and tact lest natural susceptibilities should be wounded; and when confidence is gained, as a rule, parents, especially young parents, will listen to, and will follow, advice beneficial to the health of their children and themselves. It is easier perhaps to interest the parent in her own health than in that of the children who seem to her to be thriving at least as well as children in her circles generally do. But pregnant mothers are quick to learn, or are already aware, that if they are not adequately nourished the child will be born in unfavourable circumstances and that they may not be able to supply it with fitting nutriment. The first step in the direction of promoting breast-feeding is to see that the expectant and nursing mothers are themselves well fed, and with this end in view several philanthropic schemes are now running in London with a certain measure of success. The feeding of nursing mothers seems to have been first given a trial in Chelsea among London districts, and this was one of the earliest attempts in Great Britain to deal with the matter, although on the continent for several years there have been organised attempts of the sort. The benevolent institution of "Allaitement Maternel" founded by Madame Bequet de Vienne in 1876 for the care of the enceinte poor developed in 1892 into a home in which such women were fed, clothed, and treated. A little latter Madame Coullet launched in Paris, by means of the association known as "Œuvre du Lait Maternel," a free restaurant for nursing mothers. Both these institutions have been noticed before in the columns of THE LANCET. The latter undertaking was at first conducted on a very modest scale, the original restaurant being established in the abandoned shop of a dealer in cast-off clothes. At the present time the association has five free restaurants situated in the poorest parts of Paris and these supply many thousands of free meals to poor nursing mothers. No questions are asked of the applicants for the meals. They may be married or single, but if they are nursing mothers and hungry they are made welcome. A free restaurant on similar lines was established in Nice in 1906 and the Social Union of Dundee opened the first restaurant for nursing mothers in that city in May, 1906.

Mrs. W. E. Gordon, a lady living in Chelsea, inspired by the success of the work done in aid of nursing mothers by Madame Coullet, determined to pursue a similar course in Chelsea. Notice of the project was sent to the district visitors, the medical men and the clergy of the neighbourhood, and to the sanitary inspectors of the borough, as also to the ladies who visit the maternity cases in charge of the obstetrical department of St. George's Hospital. In January, 1906, a room was hired and opened in Arthur-street, Chelsea, at which good meals could be obtained by nursing mothers on payment of 1*d*. The scheme flourished

and now three kitchens are in existence in Chelsea at which dinners are provided, not only for nursing but also for expectant mothers. One of these is in the Salvation Army hall in Denyer-street; another in St. John's Mission Hall, World's End; and the third and central kitchen in Sydney-street, whence it was removed from its former quarters in Arthur-street. It has been found from experience that it is more convenient for the mothers that the kitchen should be near their homes. It is therefore proposed as the scheme develops not to move into larger central premises, but rather to multiply the small centres. Suitable cases to benefit by the scheme are selected by responsible persons—i.e., by a nurse, a district visitor, or a lady inspector. The dinners consist of meat and vegetables with cocoa, with occasional interludes of fish, soup, or pudding. The meals are provided on five days of the week, the exceptions being Sunday and Monday, because the poor nearly always contrive to provide a good meal on Sunday, enough of which will be left to feed the family on Monday also. The dinners are served from 12 to 1.30 and women can attend two or three months before their confinement and up to the time that the baby is nine months old if they continue nursing. A short time ago I paid a visit to the central kitchen in Sydney-street, Chelsea, during the dinner hour and found 15 women, for the most part young and with infants, enjoying an excellent meal in a good-sized room in the basement next to the kitchen. At this kitchen an average of 30 dinners were provided daily in July and at the St. John's Mission kitchen about 15 dinners were supplied daily. The kitchen in Denyer-street was closed during the summer months. The following summary of the work done will show the value of Mrs. Gordon's labours and those of her collaborators. There were served 6697 dinners during the year 1907, while between Jan. 1st and June 30th, 1908, 4936 dinners were provided. The cost of the undertaking for 1907 was £150 and the cost of each dinner was approximately 4½*d*. The mothers and infants whom I saw seemed healthy and I was informed that in several instances the mother was not able to suckle the child when she first attended, but that after she had received good nourishment for a time she was able to do so. I was also told that in Chelsea the difficulty met with so frequently of persuading mothers to suckle their infants was greatly lessened owing to the fact that there are no large factories in the borough in which women are employed. Consequently the majority of the women are at home all the day, or if they do go out to work it is only to perform some light labour which will not keep them long from their homes. The infants of the mothers who are being fed are inspected by a medical man and weighed every week, and the mothers take the greatest interest in the weight of their infants. The main differences between the Coullet restaurants in Paris and Mrs. Gordon's kitchens in Chelsea are that at the latter the meals are not free, though the price is so very moderate as 1*d*., that the women must be recommended as fit cases, and that they must attend regularly having once been recommended. This comes to mean that the women assisted in Chelsea will be of a respectable class, while in Paris a helping hand is given to any woman who applies for it, pregnancy or nursing being the only qualifications.

The next and most ambitious scheme in aid of the proper bringing up of infants in London was inaugurated in St. Pancras parish in the early part of 1907 and has already been alluded to in THE LANCET.[1] Dr. J. F. J. Sykes, medical officer of health of St. Pancras, has laboured long and hard to encourage the natural feeding of infants in the district under his sanitary supervision and the St. Pancras School for Mothers is a philanthropic attempt to further the efforts now being made by the municipality. The St. Pancras School for Mothers is based partly upon the principles of the School for Mothers at Ghent but modified and adapted to the needs of the St. Pancras district, embracing as well the system in force in Chelsea of feeding expectant and nursing mothers. The municipal and philanthropic schemes in St. Pancras for the reduction of infantile mortality and sickness are worked in unison to some extent. The official lady health visitor of St. Pancras, having access to the notifications and registrar's returns of all births occurring in the borough, is able to select cases within easy distance of the school which in her opinion might be benefited by the advice and treatment given there. The parents are informed by her of the objects of the school and she tells them when to attend. The school for mothers has its quarters on the ground floor and basement of a good-sized building in Chalton-street, Euston-road, N.W. I visited the school and I saw expectant and nursing mothers at dinner, and inspected the whole premises and received all the information which I asked for in regard to the working of the scheme from the lady superintendent. The work is divided into the following departments: 1. Infant consultations. 2. Dinners for nursing and expectant mothers. 3. Educational classes for mothers. 4. Provident maternity club. 5. Home visiting. 6. Fathers' evening conference. The titles indicate the kind of work done under each heading.

1. The infant consultations form a medical department for the treatment of infants under 12 months of age. Miss Dora E. L. Bunting, M.B., B.S. Lond., who acts as honorary medical officer to the charity, attends at the school on two afternoons of the week to examine babies and to give advice as to the feeding, clothing, and general management, as well as to assist the mothers in any medical matters.

2. To come to the dinners, the rules are the same with regard to the feeding of expectant and nursing mothers as are in force at Chelsea, except that the charge for the dinner is 1½*d*. instead of 1*d*. The dinners at St. Pancras are provided at an average cost per head for actual food of less than 2½*d*., and this is probably much the same as the cost at Chelsea, where 4½*d*. covers all the expenses and not only the actual food. The mother pays 1½*d*. per meal when able; in some cases private individuals or charitable associations bear the cost, while in a few other cases meals are provided gratuitously if after investigation the cases are found to be deserving ones. Many of the expectant or nursing mothers are said to be almost starving when admitted to the meals, and the lady superintendent informed me that the results to mothers and children from substantial and nourishing food have been most gratifying. The cleanliness of the building, the plentiful supply of food, and the general well-being of the regular attendant, can hardly fail to strike every visitor.

3. The educational classes for mothers have more or less succeeded in their object, but exactly how far it must be always difficult to say. The diffusion of information among uneducated persons is difficult and disappointing, and too much must never be expected from it. The knowledge is being diffused, but the actual results may not be appreciable for some time. On Thursday afternoon of each week a cookery class is held at the school, at which women are taught how to prepare and to cook simple nourishing dishes. It is well known that this kind of teaching is greatly needed in all parts of England; in many provincial and country districts county and municipal authorities have been trying to supply it. The result is that the poor housewives of London are more behindhand in domestic economy than many of their country compeers. A knowledge of the manner in which to prepare and to cook cheap and nourishing food has been found generally absent in St. Pancras, and this is a matter which the school is trying to alter. Simple dressmaking is also taught. On Tuesday evenings women are invited to practise cutting out at the school and on Wednesday afternoons, while mothers make garments for their children, elementary lectures are given inculcating the value of fresh air and cleanliness; the meaning of economy with respect to food; and the various lessons to be learnt for the management of pregnancy and the care of infants. This class is said to be most successful in its results; the mothers manifest great interest in the proceedings and willingly undergo catechism on the previous lesson, showing that they certainly absorb a large amount of extremely valuable information. This information spreads. The women of the working class are gregarious in their habits—is it not considered by them a mark of gentility "to keep yourself to yourself"?—and while they are slow to learn, when once they become impressed with certain simple truths—as the good effects of the open window, the healthfulness of the daily bath, the injurious influence of "comforters," and the importance of breast-feeding—they come to regard these things as articles of faith and to disseminate the gospel throughout the area in which they and their acquaintances live.

4. A provident maternity club has been instituted in connexion with the school, by the agency of which money is laid

[1] THE LANCET, June 15th, 1907, p. 1665.

by for the medical man or the midwife, for baby clothes, and for extra help and feeding during confinement. Passing over 5, home visiting, which will be alluded to in a subsequent article, I come to 6. Perhaps the most novel feature of the St. Pancras school is the fathers' evening conferences. These are held on Tuesday evenings with the object of exciting the interest of the male in his domestic affairs. Several well-known men have addressed these meetings and it is thought that, at any rate to some extent, the purpose of the conferences has been attained. If the British father of the quite low class can be aroused to exhibit an intelligent concern in the welfare and health of his family and home much good will be done.

(To be continued.)

THE SANITARY DEFENCE OF THE HEDJAZ RAILWAY.

(BY THE BRITISH DELEGATE ON THE CONSTANTINOPLE BOARD OF HEALTH.)

(Illustrated with Reproductions of Photographs taken by the Author.)

I.—DAMASCUS TO MA'AN.

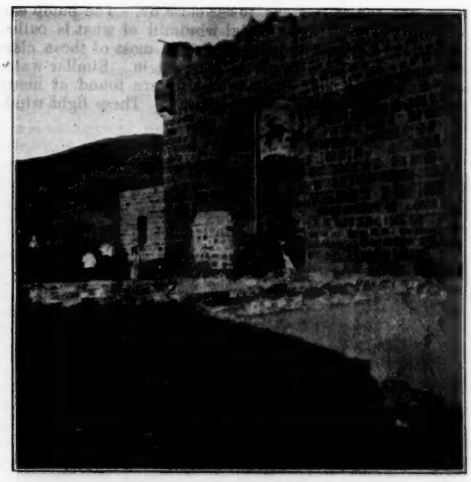
WHEN writing a few months ago the brief article entitled "The Hedjaz Railway and Disease," which appeared in THE LANCET of June 20th (p. 1799), I was quite unaware that very shortly after I should have an opportunity of travelling down the line and visiting most of the places which I had mentioned. This came about in the following manner. On May 19th the Board of Health here decided to send a Special Commission composed of some of its members to the region traversed by the line, with the general object of studying on the spot the question of the sanitary defence of the railway and the special object of selecting the most suitable site for the quarantine station for pilgrims which sooner or later must be brought into being at some point between Damascus and Medina.

The Commission was composed of the Dutch, German, and British delegates on the Board, and a Turkish medical officer in the Sanitary Service, with a second Turkish medical man as "adjoint." The Commission, leaving Constantinople on May 28th, arrived at Beirût on June 1st and at Damascus on June 3rd. In Beirût a sixth member was added to our number in the person of Professor Patch, who holds the chair of chemistry in the American College of Beirût and who accompanied the Commission throughout and undertook the collecting and analysis of specimens of water at the various places visited. In Damascus three more members were added to the mission by the Vali of the Damascus vilayet; these were a major of infantry and a military surgeon, both attached to the administration of the railway, and Dr. Haidar Bey, who, although a medical man, does not practise any longer but follows the business of contractor for public works. He has put up most of the buildings along the railway beyond Dar-ul-Hamra and is now constructing the terminus at Medina. It may be stated in passing that this terminus is being built on an immense scale, the combined length of the platforms running into some kilometres. It should thus be able—as it will almost certainly be called upon—to cope with the arrival or departure of large numbers of pilgrims at a time.

A special train was placed at the disposal of the Commission, consisting of a sleeping-car, an ordinary first-class carriage capable of seating 48 persons, and an empty luggage wagon. In the last the cook and kitchen were installed as well as the provisions for the journey. All stores had to be taken from Damascus, as beyond Ma'an nothing is procurable; the stores for 14 persons (including servants) for an eight days' journey were necessarily of considerable bulk. They included a supply of compressed snow from the Lebanon, which was of great service in the high temperatures met with. The Commission left Damascus on the morning of June 6th and reached Ma'an 25 hours later. Between the two the line traverses the marvellously fertile region of the Hauran and skirts the curious volcanic tract of country known as the Trachonitis. This has been well described as a solidified sea of lava. The black lumps and heaps of volcanic stone which litter the surface of the country offered a striking contrast to the brilliant gold of the standing crops in early June, and no less so did the occasional villages built of this same black-hued stone. Beyond Amman—the Rabboth-Ammon of the Old Testament—the country becomes less and less cultivated, and the true desert gradually begins.

Ma'an is situated in a vast undulating plain of sand and gravel. The station lies at a height of 1074·2 metres above sea level and at a distance of 459 kilometres from Damascus and 943 from Medina. There are two villages, called respectively Ma'an-el-Sham and Ma'an-el-Hedjazié (or Ma'an-el-Misr), both at least one and a half miles from the station and not visible from it. I had occasion to visit them on the return journey on the way to and from Petra. Ma'an-el-Sham is rapidly being abandoned and falling to ruins, while Ma'an-el-Hedjazié is increasing at its expense. Together they contain some four or five thousand inhabitants. Both are typical Arab villages built of sunburnt mud-bricks. The latter has plenty of water and is rich with gardens, where figs, vines, palms, and pomegranates grow in abundance, offering a grateful rest to the eye dazzled by the glaring sand all round. There is a *kaimmakam*, or Turkish governor, here; his office is in the old Arab *kala'at*, or fortress, which guards the *burket*, or water-reservoir, as in all the villages along the

FIG. 1.



A typical *kala'at* and *burket* (at Akhdar).

Pilgrims' Way. Far more often than not, indeed, there is no village at all, and the various places figuring on the map are represented in reality by nothing but the all-precious water reservoir and the high-walled fort to guard it. Between Ma'an and Medaini-Salih, a distance of 496 kilometres, almost the only village worthy the name is that of Tebuk, to be mentioned later.

The *burkets*, or reservoirs, and *kala'ats*, or fortresses, deserve something more than passing mention. The reservoir has usually solidly built walls and parapets of native masonry; it is square or oblong, with a diameter of some 20 or 30 yards. The depth, from the top of the parapet, may be some 12 or 15 feet; the water is rarely more than from 3 to 5 feet deep. In some the water seems to be constantly renewed from springs and to be fresh and sweet; in others, however, the reverse is the case, and the water is stagnant and covered with an offensive scum. I shall recur to this point when speaking of the water provision for passengers and pilgrims travelling by the line.

The *kala'ats*, or forts, are solid four-square buildings of masonry; they have no outer windows but their walls are pierced by numerous loop-holes for rifle fire. The rooms inside are built round a small courtyard, in which there is usually a well, so that the defenders can withstand a Bedouin attack as long as their provisions last and are in no danger from lack of water. At all the stations along the line,

beyond Dat-el-Haj, the solitary station-building is constructed on almost the same plan though on a much smaller scale.

Meissner Pasha, the chief engineer for the construction of the railway, resides at Ma'an in a stone house built close to the station. He was unfortunately absent when the Commission passed through on its downward journey, having gone to the head of the line. On the return journey, however, two of our number separated here from the rest of the Commission who proceeded directly to Damascus; we made a rapid excursion to Petra and on returning to Ma'an we found that Meissner Pasha had come back. He was good enough to furnish me then, and since by correspondence, with much valuable information on many points connected with the problems which the Commission was called upon to solve.

The water-supply in the neighbourhood of Ma'an station is derived from a spring called Ain-el-Kelbé and from numerous wells. The spring is about 500 yards from the station; the water here is gathered in a small stone cistern constructed at the source. This has no parapet round and surface contamination undoubtedly takes place. The spring yields about 25 tons of water a day; some of the water is carried from the spring by a conduit to a well close to the station. The soil here appears to be composed of a mixture of calcareous stone and clayey earth below the surface of sand. The well is 18 metres deep; by the side is a steam pump which raises the water to two reservoirs of 100 tons each on the top of a stone tower close by. The pump can also be worked by a light metal windmill of what is called the American pattern, though this (and most of those elsewhere along the line) is of German origin. Similar water towers with steam pumps and windmills are found at many of the principal stations on the railway. These light windmills are very suitable for the purpose of raising water in these regions, where a wind—often of great force—is almost constantly blowing day and night. Such a windmill costs about £100, or, including the cost of putting up, about £120.

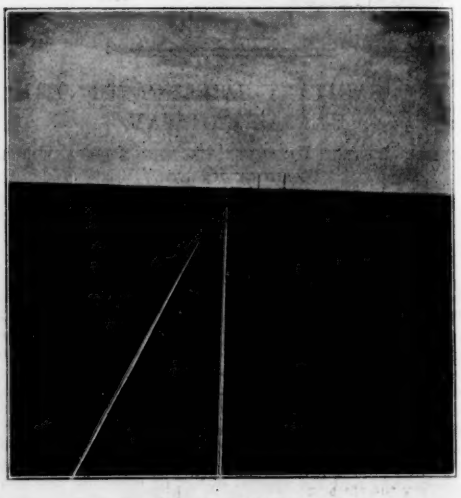
FIG. 2.

Water tower and windmill (at Tebuk station).

The well just described yields about 30 tons of water per day, to which must be added about 10 tons brought from Ain-el-Kelbé. There is a second well being dug 24 metres away from the first; here a layer of water was found at 10½ metres depth. A third well exists about 150 metres away in another direction; its depth is 15 metres and its yield about 50 tons. A fourth well has been sunk in the garden of Meissner Pasha's house; its depth is also 15 metres and it yields about 24 tons of water per day. Finally, a kilometre to the north of the station and about 100 metres from the line is a fifth well; it is said to be only 5 metres deep and to yield 50 tons per day.

It will be seen that there is no lack of water at Ma'an; but its quality is less satisfactory than its quantity. The water from the Ain-el-Kelbé springs gave the following results on analysis: Colour, faintly yellow; smell, faintly earthy; chlorine, 15·4; nitrogen—as nitrates 0·029, as free ammonia 0·003, as organic ammonia 0·005, total 0·037; oxygen absorbed by the permanganate process in three hours at 27° C., 0·0648; total hardness 15·08, permanent hardness 14·06; total solids, 56·4. All the preceding figures represent grammes per 100 litres, or parts per 100,000. The well waters of Ma'an were not analysed; they are said to be better than the spring water, but they contain much calcareous matter, tend to cause gastric disturbance, and are shunned by some officials on the line, who import their water from Amman 237 kilometres away.

FIG. 3.



The line across the desert.

The climate of Ma'an is cooler than is that of places further south; the thermometer never rises there, it is said, above 40° C. (104° F.). I noted there, at 1 P.M. on June 7th, a temperature of 33° C. (91·4° F.). Unfortunately no meteorological records exist at present for any of the places along the Hedjaz Railway, with the single exception of certain pluviometer readings kept by Meissner Pasha for the last year or two at Ma'an. He has kindly furnished me with the following readings, which show how scanty the rainfall is here:—

Rainfall at Ma'an.

			Millimetres.				Millimetres.
1904.	August	12th	3·5	1906.	Jan.	5th	0·50
,,	Oct.	2nd	0·2	,,	,,	14th	0·75
,,	,,	4th	0·2	,,	,,	15th	5·75
,,	Nov.	17th	1·0	,,	,,	28th	4·50
,,	Dec.	31st	1·3	,,	Feb.	1st	5·00
1905.	Jan.	3rd	26·0	,,	,,	27th	1·00
,,	,,	29th	5·0	,,	,,	28th	10·00
,,	Feb.	4th	2·5	,,	April	11th	2·50
,,	,,	5th	4·0	,,	May	7th	1·50
,,	,,	16th	1·0				
,,	,,	18th	2·5			Total	80·45
1906.	Jan.	4th	1·75				

It will be seen from these figures that in two years only some three inches of rain fell at Ma'an. Sand storms, which are very frequent and severe at some places on the line, are not common here; they occur perhaps three or four times in the year.

Ma'an had been suggested as a possible site for the future pilgrims' lazaret. There would be abundance of land suitable for the construction of such lazaret. Good building stone is found in considerable quantity; it occurs in large nummulitic lumps. The station buildings are extensive, and are mostly, if not all, built of this stone. There is a buffet and even an hotel at the station. I had occasion to stop a night

here on the return journey and was grateful to find any accommodation.

There is a small garrison at Ma'an, and a considerable number of troops were also camped out in the desert, away to the west of the line; they were said to have come up from Akaba, on their way back from the Yemen. The railway authorities have built a small hospital for their employees close to the station of Ma'an, on the east side of the line. It was built of wood and of far too unsubstantial a nature to withstand the strong winds which so constantly blow here, with the result that the front wall had completely collapsed shortly before our visit here. There is another and more solidly built hospital at Tebuk, further down the line, of which I shall have occasion to speak later.

THE INTERNATIONAL CONGRESS ON TUBERCULOSIS AT WASHINGTON.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

ON THE ROAD TO WASHINGTON.

New York, Sept. 11th.

Sanitation at Sea.—Sanitary Laundries for Ships.—The Rival Claims of Passengers and Machinery for Space.—A Modern Solution of the Problem.

To attend the International Congress on Tuberculosis which this year meets at Washington I was about to embark on one of the huge and luxurious floating hotels that cross the Atlantic when it occurred to me that such a journey opened out questions of interest from the public health point of view. There were the ventilation and the drainage of the ships, but there was also the question of general cleanliness. Anyone can see how constantly the decks are scrubbed and the stairs are washed and wiped, and how all is beautifully clean and brightly polished, but what becomes of the soiled linen, of the very towels and cloths with which all this outward cleanliness is maintained? Where do they go and how are they washed? The public does not realise what a huge business this entails. So as not to be dependent on others and also to reduce the expense the great shipping companies should have their own laundry machinery and staff. The placing of the *Lusitania* and *Mauretania* on the line of traffic between Liverpool and New York produced, among many other effects, quite a little revolution in the laundry world. This can easily be understood when it is known that these ships on arriving at Liverpool send ashore all their washing, and this amounts in articles, both large and small, to no less than 65,000 different objects. Such is the extent of what is called the summer wash. But the winter wash is nearly as great because, though there are then not nearly so many passengers, the dirty linen is not landed and washed at New York but brought back to Liverpool, and thus in winter the amount of two voyages is landed and about equals that of one voyage in summer. When all this is washed, ironed, and folded it requires eight large furniture vans packed quite full to carry the linen back to the ship. As there are the other ships besides the two giants mentioned above the Cunard Company had to make provision for washing at their Liverpool works something like 120,000 pieces of linen per week. Considering that any one of these pieces of linen might be the means of conveying infectious disease from one person to another, and as all travellers when once on board have no option but to use the ship's linen, the importance of the laundry question is obvious. So much is this the case that with the advent of the *Lusitania* and the *Mauretania* the laundry at the Cunard works had to be enlarged considerably and reorganised. Consequently, before going on board, I made a point of visiting this new installation.

Of course the first and most difficult problem is that of the steerage passengers, for many of these poor people are far from cleanly in their habits and person. Therefore, without entering the Cunard works at Bootle but from the streets, there is a shoot where specially dirty objects glide down into a basement close to a disinfecting stove. This stove will hold and disinfect by steam under pressure in an hour six horsehair mattresses. It is worth while preserving these and they generally are used by the stewards and the crew. But the steerage beds are of straw and these are simply carted off to the destructor where they are burnt. The stove used is known as Alliot and Paton's steam and vacuum disinfector. When there is any linen known to be infected, such as the linen used in the ship's hospital, this is taken by the port sanitary authorities and disinfected by them; but as an extra precaution it is again disinfected in the company's own stove. Here also is placed all linen containing vermin. When in any cabin or part of a ship vermin are found the linen is placed in a bag to be disinfected as soon as the shore is reached; the cabin itself is rendered air-tight and fumigated. Thus all source of nuisance is promptly dealt with and the evil is suppressed.

The chief danger in laundry work rests in the fact that it is not always possible to ascertain when linen is infected. The person who conveys the germs is sometimes not himself aware of his own condition. Consequently it is satisfactory to know that the ordinary normal process of washing is very generally and in itself also a disinfecting process. To my mind, it has always seemed that the chief risk is with the cleanest linen—the towel or the serviette that has only been used once. It is only slightly crumpled, it seems to be quite clean, but it may bear pathogenic germs for all its apparent cleanliness, whereas another towel that is very black and dirty may be quite innocent of any cause of infection. On the other hand, it will require so much washing that even if infected there is every likelihood that the germs will not survive the process of washing. Consequently I was more anxious to watch what was done with the linen that is almost clean. Fortunately, I found that unless linen is boiled the whiteness of its colour cannot be maintained. On the other hand, when linen is very dirty it must not be boiled at first as this would fix the mark of the stains. It has therefore to be soaped and scrubbed and passed through several changes of water before it is placed in boiling water. Ultimately both the dirty and the comparatively clean linen reach the boiling water stage and are thus disinfected by heat during the natural process of washing, not to mention the action of the soap and the passing currents of water. Thus the serviette and the towel may be used in all security.

Of course, the unwashed dirty linen is kept apart and is sorted in heaps corresponding to the methods of treatment to be applied. There are long cylindrical washers, armed inside with wooden knobs that beat the linen and make a lather, which can hold 2000 serviettes. The cylinder revolves and the linen is stirred and shaken as if washed by hand. Then very powerful flushes of water can be discharged in these cylinders, thus replacing a running stream. Indeed, such a lavish use of water is necessary that a new four-inch water main has had to be brought from the street main to the works. To clean the blankets the steam of the engines is used. This soft condensed water is very useful for that purpose. When the linen has been washed or cleaned there are centrifugal hydro extractors capable of 850 revolutions per minute. The cage holding the wet linen is 42 inches wide and when this whirls round at the above rate it soon throws all the water out of the linen. A canvas cover is put over the top to prevent anyone falling in or getting entangled in these powerful machines. On leaving these the linen is ready for ironing. For this purpose a new apparatus has been devised. It is capable of working at 12 different speeds. The heavier and more moist the linen the slower it has to work. This machine consists of two hot revolving cylinders or rollers and the linen is pressed or ironed by passing it between them. This, of course, is an old device, but the machine here used is the latest on the market and the novelty rests in the fact that it is driven by electricity and is 144 inches long, whereas the largest standard size is only 108 inches. This provides about 1100 square feet of ironing surface per minute. There are three such machines working side by side, therefore it is possible to iron 3300 square feet of linen per minute. As it cannot take much less than a minute to iron a serviette by hand it will be seen what an immense saving of human labour has been effected. Furthermore, the action of this machine is so perfect that it is not necessary to starch table-cloths. They get their glossy appearance from the high finish of the machine. Each machine has six feeders who place the linen on the rollers. This work used to be accompanied with some risk as the fingers were sometimes caught and the hand was seriously injured. Now an automatic finger guard has been devised that runs the whole length of the cylinder and if the fingers

press too far forward they go under this guard and lift it. This action at once stops the machine and the hand cannot be carried forward and crushed. Also only women are employed and no "young person," therefore it is only natural that there are no accidents on record. If this or any other machine is overloaded there is a fly back switch which at once stops the electric current and it cannot be set on again till the machine is sufficiently unloaded. There is a great advantage in employing electric power to work a laundry. It is very clean and the machinery can be set going any time either night or day, whether the engineers are present or absent. It sometimes happens that to provide the ships with all that they need it is necessary to keep the laundry open all night as well as all day. From 55 to 60 laundry workers are employed and the premises are large enough to hold 290 workers without exceeding the limits in regard to space laid down in the Factory Act. Not only is there thus plenty of breathing room but there are four ventilating fans to pump the air out of the ironing room. On both sides of this vast and lofty department there are high windows with louvre openings at the top and French openings—that is, an opening like a double door—for the lower part of the window. All these are opened in summer, while the openings that are above the heads of the workers are more especially useful in winter. The entire premises are scrubbed out every week and thus all is kept bright and clean. Also many fly-catchers are used, so that the linen shall not be fly-blown or contaminated by these at times dirty insects.

After thus examining the latest improvements affecting the sanitary problem involved in the washing of ship's linen I boarded the *Caronia*. This and her sister ship the *Carmania* represent a new departure in ship building that is of special interest from the health point of view. The only difference between these two ships is that the *Caronia* has reciprocating engines and the *Carmania* has turbine engines. The idea was to try which of the two sorts of engines was the best by applying them to ships that were in every other respect built in the same way, but though these two ships have been running since 1905 it does not seem as if the experiment has as yet supplied an answer to the question. Leaving engineers to decide this matter the point interesting as regards the sanitary aspect of ship building may be stated as follows. To build a high-speed ship—that is, a ship going 16 or more knots per hour—a great deal of room has to be devoted to place large-sized machinery on board, together with the casing of the big funnels and the numerous large ventilators that have to be carried below to supply enough air to the furnaces. All this results in taking up so much space that it has seriously interfered with the size of the cabins. Consequently, from the health point of view, we should advocate slow boats where the machinery does not take up much room, for there would then be a better prospect of plenty of space in the cabins. To-day, however, we have in the *Caronia* and *Carmania* a new type of ship—namely, fast boats with high superstructure. This was obtained by a design and system of balancing which assured an unprecedented stability. In consequence of this stability a large amount of structures could be erected above the main decks or body of the ship. Here, then, was found the means to give large rooms to the passengers in spite of the fact that these are swift ships, for they travel at the average rate of 18 knots an hour; indeed, I have just crossed in the *Caronia* and our average speed was 18·30 knots. The fact is, however, that it was not expected that these ships would travel so fast; they were built for comfort, for freedom from sea-sickness, and not for speed. The rapidity at which they travel has come as an agreeable surprise. From personal experience I can vouch for steadiness. Nevertheless, we had two "moderate gales," a fair allowance of ground swell, and the Atlantic roller came lazily along as usual to try the ship. So steady is this ship that it has become known as the ladies' boat and is patronised by the worst sailors; yet in spite of this fact there were very few people ill during the crossing.

Nowhere have I seen such spacious cabins. The cabin which I occupied, which very rarely holds more than two passengers, though a third bed might be made up on the sofa, measured 10 feet by 12 feet; there are rooms in hotels that are not any larger. There are a large wardrobe in which to hang clothes, a chest of drawers, with a writing-desk that pulls out, and also a folding table that can be placed in any part of the cabin. There are also numerous little shelves and little drawers for holding toilet knick-knacks, &c., and even an arm-chair is provided. This latter certainly was made of light cane work, so that if it should fly about in the cabin during a storm it would not hurt anybody, but the ship is so steady that nothing seems to move. At times I felt inclined to doubt if the ship itself was moving and the ingenious devices which I had brought with me to test motion and vibration had to remain at the bottom of my trunk. This sort of room gives on to the promenade decks. It will be noted that they are called rooms and not cabins, among other reasons because they have windows instead of portholes. Above the window there is a ventilator, which by turning a handle can be opened more or less widely according to the strength of the wind blowing against it, and it is very useful when the wind is too violent to have the window open. Also, if it is very cold the rooms have each a small electric stove and this can be used or not just when required. On the inner side, in the passages there is not only much natural ventilation, but air trunks provided with power act as extractors, notably in all the lavatories and bathrooms. If a passenger should close both his window and the ventilator above it there are several openings on the opposite side which he cannot close and he is thus supplied with air in spite of himself. Below, where there are no windows in the third-class and the crew's quarters, the ventilation is assured by powerful fans revolving within thermotanks and patent port-holes that let air in even when they are closed. In all there are 11 machines and they are used sometimes to pump air in and sometimes as extractors. Experiments were made when these ships were constructed and it was found possible to change the entire atmosphere within the ship in four minutes. There is no common department in the steerage, where the passengers sleep side by side; it is divided into compartments with generally only four berths in each.

The stewards' quarters are sometimes satirically denominated the "glory hole." In old ships and some modern ships it is barely fit for human habitation. On the *Caronia* the stewards' quarters are supplied with mechanical ventilation, extensive lavatories, and a bath. My steward, in expatiating to me on these advantages, concluded by saying, "and that is why we stick to the ship." The firemen's quarters I also visited and was pleased to note that they are not allowed to put any food in their lockers, as this is a dirty and dangerous practice which attracts rats and other vermin. Of course, there was the usual prevalence of coal dust, though their quarters are constantly scrubbed out. Descending into the engine room the sense of size and power is quite overwhelming, but when looking over the details of the machinery there also comes the impression of the fallibility of man and the modesty of engineers. Whether it was a simple water gauge or a complex piece of machinery I had hardly been explained its purpose than I was shown a duplicate or some other contrivance that would do the work as well if what was actually in use broke down. Naturally, this adds greatly to the security of travel. Then again, and even if we struck a rock and had a big hole knocked into the bottom of the ship, there is another bottom at a higher level that would in all probability escape injury and prevent the water penetrating to the interior of the ship. Of course, there are also the automatic bulkheads that can isolate an injured section of the ship from all the rest of the structure. Reaching finally the much-dreaded coal-hole, where the stokers pile the fuel into the furnaces, I found the heat not so great as when visiting other parts of the machinery. There is here also probably more fresh air than in any other part of the ship. This must be the case, if not for the sake of the men, then for the coals that could not burn but for an ample supply of oxygen. Undoubtedly, stoking is hot work, requires great muscular effort, and should only be attempted by men of strong constitution, and the hours of labour must be short. But it is a great advantage for the firemen of the *Caronia* to possess ample space and unlimited hot and cold water to wash themselves with after they have done their work. It was a pleasure for me to watch several of them evidently enjoying a good splash. Thus it may be said that both for the crew and for the passengers this ship affords a great measure of comfort, of space, and of air, and consequently provides the essential conditions for insuring good health to all on board. Nor can I quit this subject without

a word concerning the skilful waiting and attendance which so largely help to make such a journey enjoyable. Personally, I am also much indebted to the captain, the purser, and the chief engineer for the time and trouble which they took to facilitate my investigations, and I cannot leave this good ship without expressing my gratitude for their courtesy.

THE SECOND CONGRESS OF THE INTERNATIONAL SOCIETY OF SURGERY.

(FROM A SPECIAL CORRESPONDENT.)

THE International Society of Surgery meets once in three years. The members are elected after nomination by a national committee for each nation and its proceedings are conducted in French, German, or English at the will of the speaker. Every effort is made to limit the membership to surgeons who are in the active practice of their profession, whilst care is taken to select the subjects for discussion sufficiently long beforehand to allow the communications to be in the hands of each member at least a month previous to the meeting. The original paper is written in French, German, or English, but a summary of its contents are issued in all these languages. It is possible, therefore, for each member to follow the train of thought, although he may be ignorant of the language in which it is expressed. The society does excellent work and is highly appreciated by the surgeons of Europe generally, though it appears to have proved little attractive to the surgeons of Great Britain and Ireland.

The second Congress began with a meeting of the members of the International Committee on Sunday, Sept. 20th, when 22 of the 24 members were present, and it was announced that the society numbered upwards of 400 members and that national committees had been formed in Russia, Finland, and Servia. The Congress was opened formally at 9.30 on the morning of Monday, Sept. 21st. Punctually to the time fixed Their Royal Highnesses the Prince and Princess Albert arrived at the Palais Cinquantière, where a magnificent suite of rooms had been placed at the disposal of the Congress by the Belgium Government which had further shown its interest in the objects of the meeting by the grant of a subsidy towards the expense. Their Royal Highnesses were received by M. Darignon, Minister for Foreign Affairs, and by Professor Czerny of Heidelberg, President of the Congress, and every member of the International Committee was presented and received with a few words of welcome each in his own tongue. H.R.H. Prince Albert then entered the large hall, already filled with members, and in a graceful speech declared the Congress open. Dr. Depage, secretary-general, read a list of the members who had died since the meeting in 1905—Mr. Reginald Harrison, Professor von Bergmann, Professor von Esmarch, Dr. Fowler of New York, Professor Terrier of Paris, and Professor Reverdin of Geneva. Their Royal Highnesses then made a minute inspection of the apparatus, maps, and specimens and the real work of the Congress was deferred until the afternoon.

The subjects proposed for discussion were Cancer in all its forms, with especial reference to treatment; Hernia; the Surgery of the Liver; the Surgery of the Spinal Cord; and Anæsthesia, whether Local, Intraspinal, or General. The subject of cancer was illustrated by a magnificent display of specimens which was divided into 14 sections, Germany, England, Austria, Belgium, the United States of America, France, Greece, Hungary, Italy, the Low Countries, Roumania, Russia, Switzerland, and Turkey. The Austrian collection far surpassed the rest, for Professor Wertheim exhibited 250 specimens of cancer of the cervix uteri, whilst Professor Hochenegg, also of Vienna, showed 112 specimens of cancer of the rectum which he had removed by the sacral route. Such a wealth of material enabled the members of the Congress to follow the course of these diseases from the earliest to the latest stages in a manner which would otherwise have been impossible. Professor Wertheim drew attention to the number of specimens in which cancer of the cervix was still in an early stage and attributed it to the instructions constantly impressed upon every Austrian practitioner of medicine to make a digital examination in every case where there were signs of uterine disease. The exhibits of the United Kingdom comprised a specimen of Primary Sarcoma of the Spleen, shown by Mr. D'Arcy Power; a case of Cancer of the Thoracic Duct, shown by Mr. J. Lynn Thomas; some interesting preparations, by Mr. W. Sampson Handley; Drawings of Cancer of the Tongue, by Mr. H. T. Butlin; and a case of Pharmaceutical Products used by Dr. Lovell Drage in the treatment of cases of inoperable carcinoma. In addition to the museum, which was inaugurated by Professor Dollinger of Budapest and carried to a successful issue by the indefatigable energy of Dr. Depage and Dr. L. Meyer, the secretaries of the Congress, there was a good exhibition of instruments and surgical apparatus.

Brussels, Sept. 22nd.

(To be continued.)

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

The University.

THE return of the number of candidates who have entered for the matriculation examination this year, excluding those who take the examination as a "school-leaving examination," shows an increase of 25 per cent. over the preceding year, the totals being 439, as compared with 355. This definite increase may be taken as an indication that there will be a practically corresponding increase in the number of students in the coming session, in which case the already overburdened accommodation will be still more strained and the longing for the relief which will be given when the physics and chemistry departments can be moved to Bournbrook will be intensified. Fortunately, there is every hope that by next year the relief will be obtained and the more especially cramped departments will be able to expand. The unfortunate death of Professor Churton Collins has removed from the staff of the University a very interesting personality, and it is remarkable that a man who always showed himself so full of life, interest, and hope should have broken down so completely after the strain of the work was over. He will be greatly missed, for he was an excellent lecturer, a most entertaining companion, and he possessed the power of interesting others in his work and ideas.

A Suggested Provident Dispensary.

The medical profession in Birmingham is at present considering a scheme for the establishment of a provident dispensary which has been put forward by a provisional committee, with whom representatives of the council of the Birmingham and District General Medical Practitioners' Union were incorporated. The objects of the scheme are to relieve the ever-increasing pressure on the out-patient departments of the hospitals, to bring about coöperation between several institutions working on somewhat similar lines, to encourage self-help and thrift among the working classes, and to secure to members of the medical profession some slight remuneration for work done. That hospital treatment is sought by cases that can be quite easily and effectively dealt with by the ordinary practitioner is demonstrated by the fact that at the General Hospital the number of out-patients was reduced last year from 65,427 to 62,102 by the simple expedient of referring all trivial surgical cases elsewhere after first-aid had been given and by referring all chronic cases which did not require hospital treatment to general practitioners, clubs, dispensaries, and the Poor-law authorities. Stated broadly, the present suggestion for dealing with patients who have very small means but who are still able to pay something for treatment is that every applicant for admission to membership shall pay 1*s.* as entrance fee and a subscription of 5*d.* a month or 5*s.* a year. The 1*s.* entrance fee will secure the applicant a medical examination and for the subscription he will receive treatment by a medical practitioner, chosen by himself, and medicine from the local branch of the general dispensary. Any registered member of the medical profession who has practised independently in the Birmingham district for 12 months may become a member of the medical staff of the dispensary provided that he does not continue to hold a private medical club. He may decline to accept any individual patient and he will not be required to

attend any patient who lives beyond two miles from his residence. It is suggested provisionally that 70 per cent. of the application fees and subscriptions shall be divided amongst the members of the medical staff, that 20 per cent. shall be paid to the general dispensary to cover the cost of drugs, dressings, &c., and that the remaining 10 per cent. shall be allotted to the secretary to cover the cost of his services, staff, office, &c. It is a far better scheme than that which was put forward about a year ago by the General Medical Practitioners' Union and the central division of the British Medical Association, and which was subjected to such severe criticism that it was abandoned. It has already aroused great interest, and although it is obvious that it will not satisfy everyone there is no doubt it will receive careful consideration when it is submitted to the annual meeting of the General Medical Practitioners' Union.

The Women's Hospital.

The need for an increased income if the Women's Hospital is to continue and to extend its useful work has led to the formation of a Women's Hospital League the object of which is to raise £1000 per annum for the Birmingham and Midland Hospital for Women, and when this object has been attained to give assistance to other hospitals of the city. The necessity of the Women's Hospital is urgent and there are plenty of people who can afford to give it support, but the difficulty is to induce them to give money. Mr. Neville Chamberlain, who moved that the league should be formed, was undoubtedly correct when he stated that there were many people in Birmingham who had learned how to make money but who had not yet learned how to spend it. It is quite possible that women may be more efficient instructors in the latter art than men, and it is suggested that each district and subdistrict of the city should have its divisional committee and officers. If the scheme is carried out on these lines and energy is thrown into it success seems certain.

The Health of the City.

Now that the most trying period of the summer is over it is interesting to note the gradual rise and fall of the death-rate and its association with the increase and decline of diarrhœa. The death-rate for the week ending July 11th was 11·7 per 1000, and in the published report there was no particular mention of diarrhœa. By the end of the following week the death-rate had risen to 13·3 per 1000 and there had been 11 deaths from diarrhœa. During the week ending August 1st the death-rate fell to 12·1 per 1000 and the deaths from diarrhœa were 14. The following week the death-rate rose to 13·8 per 1000 and the deaths from diarrhœa to 25. The rise continued during the next two weeks and in the week ending August 22nd the death-rate reached 20·1 per 1000 and the deaths from diarrhœa were 69. By August 29th the death-rate had fallen to 17·9 per 1000 and the deaths from diarrhœa to 52. By Sept. 12th the death-rate had reached 13·9 per 1000 and the deaths from diarrhœa were reduced to 24, and during the week ending Sept. 18th the death-rate was 14·1 per 1000 and the deaths from diarrhœa numbered 17.

Sept. 22nd.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The Prevalence of Scarlet Fever and Diphtheria.

THE medical officer of health reported at the meeting of the health committee held on Sept. 17th that 117 cases of scarlet fever were notified during the week ended Sept. 12th, compared with 86 in the previous week; and 28 cases of diphtheria, against 13 in the previous week. There are at present 687 patients under treatment in the city hospitals for scarlet fever and 59 for diphtheria.

Bootle and the Provision for Small-pox.

The scheme of the Bootle corporation to erect a small-pox hospital on the boundary of Maghull, Lydiate, and Aughton has met with opposition by the West Lancashire rural council. The scheme includes the provision of 20 beds, medical man's house, nurses' administrative block, and other accessory buildings; to put down concrete foundations for a building providing another 20 beds and an observation pavilion containing four beds; and to provide for the treatment of the sewage from the institutions. Altogether the land that Bootle proposes to acquire amounts to about 16 acres. The Bootle corporation has already a small-pox and general infectious diseases hospital in the borough itself, but the Local Government Board will not sanction the borrowing of money for a further enlargement until the small-pox cases have been removed from their present position. The rural council at its recent meeting unanimously resolved to oppose the proposal of the Bootle corporation and appointed five members of the council as a subcommittee to deal with the matter and to arrange for representation at the inquiry by the Local Government Board to be held at Bootle to-day.

Sept. 22nd.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Royal Hospital for Sick Children, Glasgow.

ABOUT a year ago the directors of the Sick Children's Hospital in Glasgow issued an appeal for £100,000 to purchase a site and to rebuild the hospital and to extend the existing branch in the country. This important movement was rendered necessary by the fact that the premises in Garnethill, which had been converted into a hospital with 74 beds a quarter of a century ago, were utterly inadequate to meet the increasing and urgent demands for admission. The hospital itself also in many essential respects fell far short of modern requirements. When the rebuilding fund amounted to £50,000 the directors, being assured that the necessary funds would be provided, felt justified in proceeding with the selection of a site which would comply with the various requirements specified in the appeal. After careful inquiry and consultation with experts and the leading medical and surgical authorities, a square of ten acres has been secured on the best and highest parts of the estate of Yorkhill. The site is the best that could be obtained in the city in respect of its exposure, openness, and elevation. It is accessible from all parts of the city by rail, tramway, and ferry, and is in close proximity to the University. It is proposed to proceed with the new hospital at once, the intention being to erect a building with accommodation for 200 beds in the meantime, leaving ample room for extension in the future as occasion requires. It is intended that the hospital shall be constructed as simply and cheaply as possible, consistent with the greatest efficiency. Up to the present subscriptions have been received to the amount of £68,000. In the existing hospital over 1000 children, all under 12 years of age, are treated annually in the 74 cots and over 11,000 are treated at the dispensary. Further, there are always on the books awaiting admission, often for considerable periods, from 150 to 200 cases, many of which are urgent.

Govan Lunacy Board.

The new pavilions which have been erected by the Govan parish lunacy board at Hawkhead Asylum were formally opened last week. The necessity for the erection of these additions was caused by want of accommodation, especially on the male side. The new pavilions will provide special accommodation for aged and infirm patients up to the number of 120. Additional accommodation has also been provided for 40 attendants. The cost of the new buildings and furnishings is £25,884, which works out at something like £154 per head. The institution now affords accommodation for 688 patients and the grounds attached to it extend to 340 acres.

The Glasgow Cancer and Skin Institution.

This institution continues to wage war against the surgical treatment of cancer. At the annual meeting the chairman, who is a layman, referred in his speech to the cases of cancer treated during the year. Apart from the continued cases, there were, he said, 65 new patients, 55 of whom were turned out well and were no more heard of, so that, according to the chairman, there was no recurrence of the malady in any of these cases. In most cases there had been one, two, or more surgical operations before they came to the institution, where the cancer was eliminated by medical treatment. Dealing with the details of certain cases, in one instance the cancer arose in the cheek of a fireman from a spark from a locomotive engine. The man was restored to health. The chairman went on to say that cases like that should convince

anyone that medical treatment was the treatment which ought to be applied for the elimination of cancer! Many of the cases of cancer in women's breasts were, he said, attributed by them to blows, and from these and the case of the fireman above quoted it seemed to him evident that cancer was due to injury. In conclusion, the chairman said it was a remarkable thing that surgeons should continue to use the knife in such cases! It is quite refreshing to find someone who, without any special training presumably, has managed to solve a problem at which for years so many able scientific men have laboured. From the statement it is apparent that not only has the question of treatment been satisfactorily settled but the members of the institution have also apparently strong views on the causation of the disease. It is to be regretted that the methods by which this cure is attained are not more widely known. As is usually the case when such claims are put forward for the cure of such a disease, patients are not lacking and money flows in from public subscriptions to the institution to the tune of £800 per annum.

Dundee Royal Infirmary.

At the last meeting of the governors of this infirmary the announcement was made of the gift by Mr. Robert Sime, Mundamalla, Newtyle, of 1000 guineas to endow a cot in the children's ward to be called the "Mrs. Marjory Sime Cot," in memory of his late wife; also of the generosity of an anonymous donor in providing for the appointment of a lady visitor to read and to speak to such patients as should desire it. Mr. William Rettie, chairman of the directors, presided, and in moving the adoption of the report, commented on the work of the infirmary during the last three months. The number of patients treated, notwithstanding the fine weather, had shown an increase on the corresponding quarter last year, as also did the numbers treated in connexion with the Maternity Hospital. It had to be acknowledged that the finances were in rather a poor way. They had had to take £9000 from the reserve to meet the current account last year, and they had an extra expenditure of something like £3200 on buildings for the present year. In those circumstances the directors made renewed appeal to the community for their generous support.

Sept. 22nd.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Difficulty of Pauper Lunatics.

THE monthly meeting of the joint committee of the Richmond District Lunatic Asylum was held on Sept. 17th. The report of Mr. J. O'Conor Donelan, the resident medical superintendent, showed that there are at present in the Richmond and Portrane asylums 1560 male and 1507 female inmates. Since the last meeting of the committee 18 males and 25 females had been admitted. The report went on to point out that a large proportion of the persons who had latterly been admitted were in a very feeble state of general bodily health, many being cases of senile, mental, and bodily decay, who up to recent times were scarcely regarded as eligible for admission to asylums. The growing tendency, on the part of union officials particularly, and indeed of the general public as well, to send all individuals who were suffering from bodily enfeeblement to an asylum was an important factor which tended to give people an exaggerated impression of the number of the insane. In fact, these institutions seem to have come now to be regarded as district infirmaries as well as district asylums. The chairman (Mr. Richard Jones, J.P.) said that he had been constantly endeavouring to stop the immigration into the asylum from the union workhouses of all people who were not proper subjects for care in a lunatic asylum at all and whose faculties had merely declined through old age. They had succeeded to a large extent in excluding these people, but not altogether. He had over and over again enjoined the medical superintendent to refuse to admit these people. A great number of them had been sent to Portrane from the North Union Workhouse. Mr. Donelan said that there was no proper provision in the North Union Workhouse for the care of the insane, and the guardians were at their wits' end to know what to do with their insane charges. One of the members suggested an amalgamation of the unions as a means of relieving the situation to some extent. The discussion is likely to have good effect on the internal economy of both asylum and workhouse in the near future.

Royal Hospital for Incurables, Dublin.

At the monthly meeting of the committee of management of this hospital, which was held on Sept. 10th, it was resolved that—

We, the managing committee of the Royal Hospital for Incurables, Dublin, unanimously express our strong conviction that the exclusion of Ireland from the operation of the Bill for State Examination and Registration of Nurses would be detrimental to the interests of the nursing profession, and we trust that a clause will be inserted in the Bill now before Parliament placing Irish nurses on the same footing as English and Scotch nurses.

At a meeting of the board of governors of the National Maternity Hospital, Holles-street, a similar motion was carried, the meeting pledging themselves to resist the exclusion of Ireland from the working of the Bill as "grossly unfair to Irish trained nurses seeking employment in England."

Cork-street Fever Hospital and House of Recovery, Dublin.

The managing committee held its usual meeting in the board-room of the institution on Sept. 10th. The medical superintendent's report showed a large increase in the number admitted, which was probably owing to the prevalence of measles and to a large increase in the number of cases of enteric fever. Scarlet fever cases were below the normal in number but of a more severe type. Diphtheria and pneumonia contributed their usual quota. Erysipelas was not prevalent during the month. A large number of subscriptions and donations was thankfully acknowledged.

A Case of Milk Prosecution.

A case which came before the Southern Metropolitan police court on Sept. 18th resulted in a judgment of unusual decisiveness. Mary A. Fagan, of 80, Clanbrassil-street, was summoned by Inspector Nolan, of the public health department of the corporation, for selling to him a pennyworth of new milk which had been adulterated with 13 per cent. of added water. It was stated that the defendant had been fined £10 on May 20th last for a similar offence, and the magistrate (Mr. Drury) adjourned the case until the first Tuesday in October in order to enable the defendant to sell her cows and to give up the business in the meantime. If this were not done he announced that he would impose a sentence of two months' imprisonment. If all such milk-dealers were treated on corresponding lines, what an inestimable boon it would be to the citizens of Dublin.

A Medical Man's Pension.

The Local Government Board of Ireland has overruled the decision of the Castlerea board of guardians refusing a superannuation allowance to Mr. S. McDermott of Ballaghaderin. He has satisfied it that he was over 60 years of age when the Local Government Act came into force, and this makes his pension compulsory. The Local Government Board of Ireland, that much-abused body, has in this instance been more generous to a medical officer who has grown grey in the honourable and efficient discharge of his poorly requited duties to the helpless substratum of the population than his employers of the board of guardians.

The Samaritan Hospital, Belfast.

As a result of the recent fête the sum of £502 has been handed over to the funds of this hospital.

Severe Weather in the North of Ireland.

There has been scarcely a day during the past fortnight without a heavy downpour of rain accompanied with high wind, with a result that all over Ulster the harvest is in a deplorable condition. Hundreds of acres of corn are uncut, and what has been reaped is lying saturated in stooks in the fields. Flooding has taken place in many of the districts in the North of Ireland.

Down District Asylum.

The report for the year 1907, just issued, shows that at the end of 1906 there were in the asylum 721 inmates, while 158 were admitted during the year 1907, that is, 24 in excess of those of the preceding year. 80 were discharged and there was a recovery rate of 45 per cent. on the admissions. It is very interesting to find that dysentery, the scourge of former years, has almost disappeared from the asylum, there having

been only nine mild cases during the year. Tuberculosis has also much lessened owing to abundance of fresh air, liberal diet, personal cleanliness, and as far as possible isolation of advanced cases. Financially, the net average cost of each patient (deducting repayment of loans, receipts from paying patients, &c.) was £22 11*s.* 5*d.* (the average for all Irish asylums under the same head for the last recorded year was £23 3*s.* 4*d.*). The actual net cost of maintenance paid directly from the county rates (deducting Treasury grant, &c.) averages about £8 0*s.* 3*d.* per head. A new scheme of sewage disposal (bacteria tanks and spray filter of Adams type) has been completed. A new water-supply (supplementary or alternative) is in process of being got ready. Mr. M. J. Nolan's report is most interesting.

Double Tenement Houses, Belfast.

Scandalous revelations have come out at the revision courts with regard to the evils of the double tenement system of houses, and the offence in such conditions not only against sanitary principles but morality which is involved. Dr. Todd, K.C., on Sept. 21st, at a meeting of the revision courts, characterised the state of matters as disgraceful, and Mr. Fleming, K.C. (another of the revising barristers), said it was contrary to all morality and decency for agents of landlords to make an arrangement by which the tenant of the upper half of the house had to go through the kitchen in order to get to the yard. The Belfast Health Association condemned very strongly such double tenement houses.

The New Public Abattoir in Belfast.

That a new abattoir in Belfast is an absolute necessity is clear and the Public Health Commission recommends that the corporation should, at the earliest possible moment, take steps to provide a more modern and commodious abattoir on a more suitable site. The matter has been under discussion since Dec. 1st, 1897, and at a meeting of the market committee held on Sept. 5th last the following motion (proposed by Dr. H. O'Neill) was carried by 8 to 2:—

> That in view of the necessity for additional and improved abattoir accommodation for the city and the expression of opinion by the Local Government Board in their letter of July 25th last to the effect that the selection of a suitable site for, and the erection of, a new and up-to-date abattoir, for which a loan of £30,000 was sanctioned by the Board eight years ago, is a matter which should receive the immediate attention of the corporation, this committee strongly recommend the council to authorise the erection of a new abattoir on the Stewart-street site, at an estimated cost of £32,118, in accordance with plans prepared by the city surveyor.

An amendment to authorise the erection of extended abattoir accommodation on the present site was lost. On the other hand, a committee of experts appointed by the corporation, consisting of the president of the Ulster Medical Society (Dr. J. McCaw), the Local Government Board inspector (Dr. C. J. Clibborn), and Mr. H. W. Bailie (superintendent medical officer of health of Belfast), has reported adversely on both sites. The Master Butchers' Federation of Belfast has recommended another site as suitable for the abattoir—that is, the present horse market site—and it condemns the present site, while the city surveyor of Belfast approves of the horse fair site, except as to cost and interference with the convenience of the markets, as the best for abattoir purposes from every point of view. It is clear that the present site is the worst and the council will have to decide which of the other two is the better, as the market committee has failed to get other available sites. The matter will come up for discussion again on Oct. 1st, when it is hoped that a final decision will be arrived at.

Sept. 22nd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Action of Human Serum upon Trypanosoma Pecaudi.

ON August 24th M. Thiroux and M. d'Anfreville made a communication to the Academy of Sciences. Following on long and minute researches they are able to announce that human blood serum has an effect upon trypanosoma Pecaudi which is demonstrably preventive and curative, similar to the effect which it has upon trypanosoma Brucei, trypanosoma Evansi, and trypanosoma equinum. They have also determined that this action of human serum takes a long time in becoming exhausted. The serum of patients suffering from sleeping sickness, which M. Thiroux has lately demonstrated to be prophylactic against trypanosoma Gambiense, influences trypanosoma Pecaudi in the same manner as does normal human serum. But as the latter substance has no influence upon trypanosoma Gambiense it is reasonable to agree with these two distinguished authors that in spite of certain morphological resemblances trypanosoma Pecaudi and trypanosoma Gambiense form two distinct species.

The Eighth International Congress of Hydrology, Climatology, Geology, and Physical Therapeutics.

This congress will be held at Algiers in the Easter holidays of next year, from April 4th to 10th. The subscription for full members is 20 francs and for associate members 10 francs. Either membership entitles its holder to the customary reduced charges at hotels and restaurants and on railways and boats, and admits to the various fêtes and entertainments. Excursions across Tunis and Algeria will be made, comprising visits to interesting towns. A ladies committee is to be organised to receive and to look after the ladies who attend. For full particulars application should be made to M. Raynaud, 7, Place de la République, Algiers. A number of papers and reports have already been promised. Anyone desirous of contributing a paper or note should submit them by Jan. 31st, 1909, at the latest.

A Hospital Tragedy.

A patient at the Pitié Hospital, after showing signs of insanity, recently took advantage of the drowsiness of a night attendant to attack him with a knife. After stabbing him several times he turned the knife on himself and then jumped out of the window, which was high above the ground. The madman is dead and the attendant is wounded dangerously.

A Medical Trip to London.

The President of the British Balneological and Climatological Society has written to the secretary of the Paris Medical Hydrological Society to say that, as it is probable that some of the French society's members will be visiting London before the Exhibition closes, in the name of the British society he invites them and all other French medical men to a meeting of his society on Oct. 29th. The committee of the Paris Hydrological Society finds that a large number will accept this courteous invitation and takes great pleasure in furthering the project of this trip to London, which is being organised by Dr. Leonard Williams, editor of the *Journal of Balneology and Climatology*.

Precautions against Cholera.

The official announcement of the existence of cholera in Russia and the news of its rapid progress are beginning to cause some disquietude among the population of Paris. The Minister of the Interior has summoned an extraordinary meeting of the Permanent Consultative Committee of the Public Health and this committee has decided to set in action from the present time the sanitary defence service, both in the seaports and on the land frontier (*service à deux échelons*) for travellers arriving in France from Russia. A Ministerial decree in conformity with this resolution of the committee has been issued containing the following regulations. Every ship arriving at a French port from the Baltic or the Black Sea will have to show a clean bill of health before admission to free *pratique* or will have to stay in quarantine for five days. At all the land frontiers there are posts for medical inspection. Every traveller on his way from Russia will be medically examined, and all those who are found to be ill or any suspect will be immediately drafted into hospital, where their clothing and luggage will be disinfected by stoving. They will be kept in hospital until they are cured. Every traveller who is not detained at the frontier will receive a bill of health and will have to declare the address to which he is travelling. The mayor of this place will be advised by telegraph of his arrival and the traveller will have to present himself before that official who will order him to be examined by a medical man and kept under observation during five days. If he should show symptoms of cholera during this period he will be isolated until he is well. If he leaves the place during this period of five days he will have again to declare his destination in order that he may undergo a similar observation when he arrives there. Every hotel-keeper who lodges a traveller coming from the infected areas must declare the same within 24 hours to the mayor of his commune or to the prefect of police if he lives in Paris. Every medical

man who shall attend a suspicious case is bound to make a similar declaration to the same authorities within 24 hours, or in default of the medical man it must be made by the head of the family with which the patient is dwelling. The penalty for infringing this decree will be imprisonment of from a fortnight to three months, and a fine of from 50 to 500 francs if the offence arises from wilful or negligent disobedience of the special decree, or imprisonment of from three days to a fortnight with a fine of from 5 to 50 francs if there is an infringement of the usual sanitary regulations. The decree further forbids the entry into any land frontier of France of soiled linen, clothing or bedding, rags, and fruits or vegetables which grow on or near the ground. All carriages which have been occupied by a patient suffering from cholera or considered a suspicious case by the sanitary officer are to be disinfected with the least possible delay.

Sept. 22nd.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Karell Treatment.

ABOUT 40 years ago a Russian physician, Dr. Karell, devised an efficacious method of treating obesity and troubles of the circulation. According to the *Correspondenzblatt für Schweizer Aerzte*, quoted in the *Münchener Medicinische Wochenschrift*, Dr. Lenhartz, chief physician to the Eppendorf Hospital at Hamburg, has recently made an extensive trial of this method, which has hitherto been little employed in Germany. The treatment is indicated especially in chronic bronchitis and emphysema, in certain cardiac disorders, and in cardiac failure following general obesity. The "cure" consists in the administration of 200 cubic centimetres of milk four times a day during five to seven days without any other fluid or solid food. On the following two to six days some other food is allowed together with the milk. First one egg and some biscuits are allowed, then two eggs and some bread, then some meat, vegetables, and milky rice pudding, so that after about a fortnight's treatment a mixed diet is being taken, whilst the quantity of 800 cubic centimetres of milk or tea is the maximum amount of fluid allowed during the next four weeks. The bowels must be looked after during the "cure" and purgatives are required subsequently. The patients, as a rule, tolerate the treatment very well and become accustomed to the reduction of fluid after the first few days. Patients suffering from cardiac weakness and troubles of the circulation are often affected with gastro-intestinal catarrh and consequently have but a poor appetite. The treatment was specially efficacious in arterio-sclerotic myocarditis, whilst in valvular diseases the success was less obvious and in degeneration of the myocardium it failed. The patients must be kept in bed during the "cure." On the third day the dyspnœa and oppression disappear, so that patients who for weeks have often passed the night sitting in a chair can take a good night's rest asleep in bed. Diuresis is also increased and drugs such as digitalis are rendered superfluous.

The Title of "Specialist."

The increasing number of self-styled "specialists" who assume this title without the warranty of real expert knowledge and training has been for long a cause of grievance for medical practitioners; this is very natural, seeing that the general public, especially in the larger towns, has become accustomed to regard the general practitioner as an inferior being and in every case of serious disease to seek the advice of a "specialist." The "medical chambers" and other representative bodies have on several occasions discussed this question and have drawn the attention of the Government to it in the hope of obtaining legislative restrictions. The Prussian Minister of Public Instruction accordingly has recently asked the opinion of the Consultative Medical Board which is attached to the ministry, (the so-called "Wissenschaftliche Deputation"). This body, consisting especially of members of the Berlin Medical Faculty and of medical officers of the higher ranks, has made the following proposals. Medical men desiring to take the title of "specialist" should have to comply with certain conditions. The title of "specialist" should be granted only to medical men who after having qualified have undergone a special training for about three years. This special training must be performed either as an assistant at a university clinic or at an academy of medicine, or in a special department of a general hospital, or to a recognised specialist. A list of the recognised hospitals, clinics, and specialists allowed to train intending specialists should be published every year by the competent authority. The candidate must show certificates of his training. The title of specialist shall be granted for one of the following branches of medicine only: clinical medicine, surgery, diseases of the eyes, diseases of the larynx, the nose, and the ear, obstetrics and women's diseases, diseases of the skin and the urogenital organs, nervous and cerebral diseases, and diseases of children. The Minister of Public Instruction has informed the provincial medical chambers of the proposals of the Medical Board, adding that the Government will abstain from bringing the matter into Parliament for legislation but that it will be the duty of the courts of honour to induce the medical men under their jurisdiction to comply with the above rule when desiring to become specialists. According to the opinion of a great many medical men the course adopted by the Government to leave the matter to the arbitration of the courts of honour is, indeed, much preferable to legislation. It would be extremely difficult to differentiate by law between men rightly entitled and men not entitled to call themselves specialists. This must always be a matter of special inquiry in each individual case, and is therefore better left to the bodies whose duty it is to control the ethical behaviour of the medical profession. The difficulty of legislation is apparent in the very proposals of the Consultative Board which only recognises eight special branches of medicine, leaving apart new methods of therapy which have recently developed, such as radiography, hydrotherapy, &c. Medical men engaged in these methods would therefore be disqualified from attaining the rank of "specialist" if such proposals were to become law. The question will undoubtedly arouse animated discussion during the forthcoming winter season.

Lipomatosis as a Sequel of Castration.

Before the Berlin Society for Psychiatry and Nervous Diseases Dr. Schuster showed the case of a man 47 years of age who had undergone castration for tuberculosis of the testicles. After the operation an enormous development of the fatty tissue took place, so that the chest, the back, the lumbar region, and the shoulders were covered by layers of fat, some regions—e.g., the forearms and the legs—escaping comparatively. The lipomatosis was, on the whole, symmetrical.

Sept. 21st.

COPENHAGEN.

(FROM OUR OWN CORRESPONDENT.)

High-Frequency and High-Tension Currents in Neurology.

AT a recent meeting of the Medical Society of Copenhagen Dr. Viggo Christiansen read a paper on the use of high-frequency and high-tension currents in neurology. He said that he had tried the treatment in 121 patients, of which number 56 were suffering from functional nervous diseases, the nervous disorders in the remaining 65 being of an organic nature. He stated as his opinion that the high-frequency current represents a useful augmentation of the suggestive therapeutic means of the neurologist. It may be employed successfully in certain forms of insomnia and is of value in combating hypnotic drug habits. Dr. Fischer had observed very considerable improvement in cases of mental depression with insomnia and urged a trial of the method in all institutions where an x ray apparatus was available. Professor Friedenreich expressed his satisfaction at the sound scepticism of the two preceding speakers with regard to the marvellous effect of the high-frequency current. In his opinion this current proved efficacious in exactly the same cases in which in former days other forms of electricity were considered valuable. For instance, both the faradic and the galvanic current had also been praised as a powerful remedy against insomnia and certain painful affections. But he felt rather convinced that these old-established forms as well as

the more recent Tesla current owed their therapeutic power chiefly to suggestion.

Local Tuberculin Reactions.

At the Royal Frederic Hospital Dr. A. Erlandsen has been carrying on an investigation into the diagnostic value of local tuberculin reactions. In the first place he draws attention to the fact that the ordinary method of testing an organism for tuberculosis by repeated injections of increasing quantities of tuberculin is faulty, because the repeated injections tend to bring about a sort of "sensibilisation" of the organism, with the final result that there may occur a reaction subsequently to the last injection, though in reality the organism is free from tuberculosis, at least in any active form. Therefore, the local tuberculin reactions are to be preferred. Their great advantage is that they may be repeated, the cutaneous reaction even any number of times, without bringing about any "sensibilisation" of the organism. The ophthalmic reaction is very trustworthy and occurs in about the same number of patients as the reaction after subcutaneous injections of tuberculin. The cutaneous reaction as introduced by von Pirquet is exceedingly sensitive; in fact, far too sensitive to be employed in adults, nearly all of whom show reaction, as von Pirquet has stated. The reason is probably that all adults carry one or more tuberculous lesions, from which, however, they have recovered, perhaps long ago, while only a restricted number of adults are suffering from active tuberculosis. Dr. Erlandsen has now shown that it is possible to modify von Pirquet's reaction (by weakening its sensitiveness) in such a manner that the reaction takes place in only the same relative number of persons as after the ophthalmic test. Instead of using von Pirquet's solution (25 per cent. Alttuberkulin) he employs a solution of 1 per cent. and covers the scarification with absorbent cotton one minute after the application of the solution, so that the solution cannot become more concentrated by evaporation. The results of this modified cutaneous test coincide pretty well with those of the ophthalmic test. In cases of clinically undoubted tuberculosis in adults there was positive reaction in 100 per cent., while persons in whom tuberculosis could not be clinically demonstrated reacted only in 18 per cent. Dr. Erlandsen's modification of the von Pirquet test must therefore be regarded as an easy and sound method of examining the organism for tuberculosis.

Small-pox.

An epidemic of small-pox has recently occurred in Christiania. It seems to be of a mild character and so far only a few deaths have been recorded. Amongst them is that of a medical man. Upwards of 100 cases are under treatment, and it is now confidently expected that the epidemic has reached its acme.

Sept. 21st.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Annual Meeting of the American Public Health Association.

THE thirty-sixth annual meeting of the American Public Health Association took place in Winnipeg, Manitoba, Canada, on August 25th, 26th, 27th, and 28th, under the presidency of Dr. Richard H. Lewis, Raleigh, N.C., U.S.A., with Dr. Charles O. Probst, Columbus, Ohio, U.S.A., acting as general secretary. It was one of the best meetings ever held and included a large number of members from Canada, the United States, and Mexico. 73 new members were added to the register. A strong local committee of arrangements had matters in charge and it consisted of medical men from Winnipeg, the provinces of Manitoba, Saskatchewan, and Alberta. Those particularly in charge were Dr. R. M. Simpson, chairman of the Manitoba board of health, Winnipeg; Dr. A. J. Douglas, medical health officer of Winnipeg; and Mr. E. M. Wood, secretary of the Manitoba board of health. Addresses of welcome were delivered by the Premier of Manitoba, the Hon. R. P. Roblin, and by Mayor Ashdown of the city of Winnipeg.

In his presidential address, Dr. Lewis referred to the recent meeting at the White House, Washington, D.C., called by President Roosevelt to consider the vital question of the conservation of the natural resources of the country which were being wasted with such lavish prodigality, stating that he had had the pleasure of attending, on the invitation of the President of the United States, to represent the American Public Health Association. As their organisation had received an invitation to be represented on a permanent committee of that conference he felt it would be wise for them to appoint delegates at the present meeting. Going on to refer to a national bureau of public health for the United States, a project which Canadian physicians were also endeavouring to obtain for Canada, the speaker considered that a national bureau with full powers would eventually weaken the work of the State sanitary authorities and considered that each State, as no doubt he thought each province of Canada, should look after its own health work. In a general way he considered that the kind of bureau required for the United States was one including within its scope and management all the specific health agencies of the Government now in existence, with the addition of others when needed. They would find the chief value in a bureau in its education and information. First, it would educate its own officials and then the health officers of the country; thirdly, the people. He referred to the Bill now pending before the United States Congress which would enlarge the powers and duties of the Public Health and Marine Hospital Service of that country, under which authority will be given for the establishment of a school of hygiene for the training of as many health officers free of charge. He considered that the natural, logical, and efficient teacher of hygiene was the family physician and advocated the education of the people by literature and popular lectures. In his opinion they should definitely and positively endorse the Public Health and Marine Hospital Service, advocating at the same time its further enlargement by the transfer to it of such agencies as legitimately come within a bureau. If they refused and made a national bureau with a Cabinet Minister in charge they ran a good chance of getting nothing. He referred to the repeated failures of the great American Medical Association in securing a national bureau with a secretary in the Cabinet, which went to prove that it was futile to try any further. He considered that the period which they were now entering on would be known in the histories of the countries as the period of hygiene.

Two papers contributed by Dr. J. Chico of Mexico City on the subject of Vaccination attracted a great deal of attention and subsequent discussion. Another on the same subject by Dr. Francisco de P. Bernaldez of Mexico, or, more properly, Methods of Practising Vaccination with Human Lymph, also came under this discussion. The latter related his method of performing vaccination as follows. The region in which the vaccine is to be inserted is washed with sterilised water, soap, and a brush, the skin being rubbed until it becomes red, and then dried with sterilised cotton. The lancets are dipped into boiling water or passed through the flame of an alcohol lamp. The pustules are cleansed entirely with sterilised water and cotton; are very superficially scarified and not used if they bleed; a small quantity of lymph is taken up on the lancet and the inoculation is made in the person to be vaccinated by means of small punctures almost adjoining each other and from six to eight in number. The lancet leaves the lymph spread over the place where the punctures have been made. The punctures do not reach below the dermic layer of the skin. The object is to produce pustules in a series, making only one scar, numerous pustules, and painless vaccination. They may be easily examined to find whether they present the characteristics of true vaccination. Any other method leaves the operator in doubt as to whether the individual has obtained immunity or not. Dr. Miguel Merquez of Chihuahua, Mexico, followed, with a paper dealing with the best methods from 20 years' experience. His experience he obtained in over 30,000 vaccinations. He agreed with his colleague from Mexico that puncture was a better method than scraping, and that animal vaccine was safer than human. Although he had been using humanised lymph for many years, he had never noticed cases of syphilis transmitted through vaccination; therefore vaccination from arm to arm might continue in countries where there were no scientifically organised institutes for the culture of animal vaccine. Dr. James Roberts, medical health officer, Hamilton, Canada, then read a paper on the Diagnosis and Prevention of Small-pox as we

have it in Ontario, and referred particularly to the outbreak in Hamilton where there had been 80 cases, with a cost to the municipality of $10,000. In nearly every case there had not been any vaccination at all, although there are stringent laws in Ontario compelling vaccination in all over three months of age. He considered that the people were becoming careless and were neglecting vaccination now that the ravages of the disease were becoming less. Too many physicians also were careless in establishing a quarantine in mild cases of the disease. Dr. Evans, medical health officer, Chicago, advised that a committee should be appointed to prepare counter-arguments to the antivaccinationists and to secure the proper dissemination of those arguments.

A report of the Committee on Ophthalmia Neonatorum by Dr. F. Park Lews, chairman, Buffalo, N.Y., brought forth from the speaker that a majority of the cases of natural blindness was due to affections of the eyes in infancy. A test made of ten schools, representing eight States and Ontario, showed that 25 per cent. of those first admitted to the schools were needlessly blind. It was found to be more prevalent in the poorer classes. Referring to the treatment of the eyes of the newly born Dr. Lews stated that silver nitrate in 1 or 2 per cent. solutions within the first 24 hours was one of the applications found to be very beneficial. In the United States circulars are spread broadcast regarding the treatment of children's eyes at birth by those most closely associated with the blind. The committee recommended that the public health officials should do all possible to spread knowledge on the subject; that all midwives should be examined and registered; that proper records should be kept in all maternity hospitals of the number of cases of ophthalmia; and that proper legislation in aid of the work should be secured.

Pollution of the Great Lakes and Rivers was dealt with by Dr. J. A. Amyot of Toronto, bacteriologist to the Ontario Board of Health. This great water system consists of Lakes Superior, Huron, Michigan, Erie, and Ontario, with their connecting rivers and straits, comprising an area of 98,640 square miles. Their elevation above sea-level varied from 247 feet (Lake Ontario) to 600 feet (Lake Superior). The depths of these averaged from 120 feet (Lake Erie) to 900 feet (Lakes Huron and Superior). Over 4,000,000 now use this source for their water-supply. The turbidity of this water was generally not more than 2 parts per 1,000,000 except in Lake Erie, where it was from 20 to 25 parts per 1,000,000. In the open lakes miles out the bacterial count seldom exceeded ten per cubic centimetre and did not contain colon bacilli, though the sewerage of over 4,000,000 people was discharged into it. If the water intakes were out 10 or 12 miles from the shore the water would be almost bacteria-free and certainly sewage-free. The normal temperature of this water in the summer time is rarely over 40° F. except on the surface. Referring to Chicago, the largest city on these great lakes, when that city drew its water-supply from the intakes a mile from shore its typhoid fever rate for the last three years of this condition was 115 per 100,000. With the intakes four miles out the rate was reduced to 40 per 100,000. Diverting three-quarters of the sewage reduced the rate to 22 per 100,000. Toronto was then referred to. Toronto this year has voted $3,700,000 for the disposal of its sewage and filtration of its Lake Ontario water-supply. The conclusions drawn by the different speakers in discussing this able paper were that the water-supply of the great lakes was perfect, that it was free from turbidity, and sufficiently hard to use in lead pipes safely.

A paper on the State control of water-supply was contributed by the secretary, Dr. C. O. Probst, who is also secretary of the Ohio State Board of Health. He said that it should be the duty of the State to protect so far as possible from pollution the water-supply. In his opinion this can much better be handled by the board of health than by a special commission. No municipality, corporation, or person should be permitted to place anything of an injurious character into any stream or body of water that is being used for a public water-supply without the approval of the State Board of Health and that board should have a sufficient number of inspectors to keep all sources of supply under close supervision.

On the last day the following papers attracted a great deal of attention: Typhoid in the West, by Dr. S. J. S. Pierce, Winnipeg; A Study of Typhoid Fever in Richmond, Va., U.S.A., by Dr. Ernest Levy and Dr. Allen W. Freeman, Richmond, Va.; Typhoid in Winnipeg, by Dr. R. M. Simpson and Dr. A. J. Douglas, Winnipeg. The facts brought out in Dr. Pierce's paper are collected from a single hospital, the Winnipeg General Hospital, which was incorporated in 1875 with 40 beds. To-day it has over 300 beds. It has received 35,000 patients, of whom 4800 were suffering from typhoid fever, 3500 coming from the city of Winnipeg alone. Out of 4605 case reports examined 3530 were males and 1075 were females. The average of the males was 26 years and of the females 21 years. One-fourth of all the cases in the year occurred in the month of September. The average duration of the fever in 628 cases was found to be 28 days. In 26 years out of the 4605 cases examined there have been 573 deaths. The mortality was high in 1884, when it was 28 per cent. For the past three years it has been 10 per cent. The greatest number of deaths occurred on the eighth day in the hospital and the average entrance was on the ninth day of the disease, the deaths occurring about the end of the second week. Dr. Simpson and Dr. Douglas stated that since 1872 typhoid fever had never been absent from Winnipeg. In 1881 and 1882 occurred the first celebrated boom of Winnipeg and typhoid fever then flourished with great vigour. Another boom came along in 1902 and 1903 and again the disease became rampant. In three years the population doubled. In 1902 there were 356 cases; 1903, 489; 1904, 1275; 1905, 1906; 1906, 1174; and 1907, 307. In spite of the fact that the water-supply was above suspicion—from artesian wells—the typhoid fever rate in Winnipeg presented the somewhat anomalous picture of a city with a pure water-supply and a high typhoid fever rate. The result was a war on privy pits and box closets in those streets not connected with the sewers, and these have been rapidly reduced and in a short time will be completely abolished. This year to Sept. 1st there have only been 160 cases of typhoid fever in Winnipeg. Richmond, Virginia, U.S.A., was selected for the place of meeting in 1909 with the following officers: President, Dr. Gardner T. Swartz, Providence, R.I.; First Vice-President, Dr. R. M. Simpson, Winnipeg; Second Vice-President, Dr. J. Chico, Mexico City; Third Vice-President, Major C. S. Mason, U.S. Army; Secretary, Dr. C. O. Probst, Columbus, Ohio; and Treasurer, Dr. Frank W. Wright, New Haven, Conn.

Sept. 5th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

The Principal Medical Officer in India.

Surgeon-General F. W. Trevor, Principal Medical Officer, His Majesty's Forces in India, proceeded on a tour of inspection from August 14th to 24th, visiting Kasauli, Rawalpindi, and Muree.

Civil Surgeons in the Punjab.

On the motion of the Inspector-General of Civil Hospitals, Punjab, it has been decided by the Punjab Government that commissioned Indian Medical Service officers should on first joining the province for civil employment be attached to the Mayo Hospital, Lahore, or other large civil hospital, for two or three months, for the purpose of acquainting themselves, under proper guidance, with the treatment of a variety of diseases, and more especially of witnessing a considerable amount of operative surgery; and further that such officers, after passing through the Mayo Hospital and before entering on a civil medical charge, should be posted for a month to a district headquarter hospital to enable them to acquire a knowledge of their work as civil surgeons and their collateral duties. The Inspector-General of Civil Hospitals evidently thinks this is a step in the right direction, for it is stated in the press report of the resolution that Indian Medical Service officers having been generally on military duty, which affords but a limited sphere for practice, find themselves inadequately equipped, more especially in regard to operative surgery, when just posted to the civil medical charge of a district where, besides the routine medical work, they have to attend to jail management, sanitary duties, &c. In this assertion all will not be inclined to agree and it is a matter of regret that the Inspector-General should have thought it was necessary to make it, for Indian Medical Service officers in

military employ are undoubtedly *au fait* with operative surgery, and cantonment general hospitals give them every facility for numerous operations, both major and minor.

A Gloomy Year in the Punjab.

The year 1907 was a very gloomy one in the history of the Punjab; a wet spring, a dry autumn, high prices, and an appalling mortality from plague combined to produce a depression which reacted on the birth-rate. The birth-rate of the year (40·8 per 1000) was badly below the average of the last five years and on this occasion it is clear that the explanation usually offered to account for a decline in the birth-rate—namely, the prevalence of malarial fever in the preceding autumn—is the correct one. The figures quoted in the report indicate at all events that the greatest decline has occurred not in the districts which were most affected by plague but in those where the deaths from malaria were most numerous in 1906. The birth-rate was, as usual, lower in the larger towns than in the rural districts. The comparatively low birth-rate in towns has formed the subject of comment for many years and is, it may be remarked, a feature common to the United Provinces and Bengal as well as to the Punjab. The birth and death registers have been checked in very many cases and there is reason to believe that these statistics are more accurately kept than is usually supposed. Mortality from plague reached the terrible figure of 666,501, and since the inception of the disease in the Punjab 2,021,779 deaths have been registered.

The Pasteur Institute.

An assistant director has been appointed for the Pasteur Institute on the hills and will arrive shortly. The officer selected is Captain A. G. McKendrick, I.M.S., of the Kasauli Institute. During the past seven months 135 patients have been successfully treated at Coonoor and the support obtained by the institution is liberal. The Government of India gave Rs. 3500 and the Madras Government a like sum; Bombay contributed Rs. 1500 and Ceylon and Mysore Rs. 500 each, while Travancore paid Rs. 100.

The Inspection of Factories.

We have heard often of the insufficiency of factory inspection in India, but in the Central Provinces the complaint is coming to be that there is too much of it. For some reason or other it is in Berar that the zeal for inspection rages with particular severity. In this division alone it appears that the establishments exposed to inspection underwent the operation 679 times during the year 1907. Of these 230 were performed by the official inspectors, 181 by magistrates, and 268 by civil surgeons. It is not specified how many factories there are in Berar, but the figures suggest that the managers, who must sigh for the old days of Hyderabad Residency rule, must find their chief occupation in preparing for inspection or carrying out the suggestions of the last visitor, and the Commissioner has been induced to observe that these are not always consistent and that there are too many of them. The Chief Commissioner is of the same way of thinking and promises to deal with the matter as soon as the orders of the Government of India on the Factory Commission report are issued. The point to aim at is evidently to keep the business to the professional inspectors, and to avoid oppressing industry under a multiplicity of miscellaneous inspections by officers who if they take any interest in the subject are liable to be faddists. It is agreeable to know that the result of so much activity has been to bring out the fact that the health of the operatives is everywhere good and that the sanitary conditions, with few exceptions, are satisfactory. The wages of skilled labour, high as they are in the Central Provinces to-day, are reported to be still rising, and yet the difficulty of getting trained hands is a general complaint.

Plague in Bengal.

In the annual report of the Sanitary Commissioner, Bengal, for 1907, some interesting facts are given regarding plague and the measures taken for dealing with it. There was a recrudescence of the disease during the year, the deaths being nearly 84,000, as compared with about 60,000 in 1906. The figures are small compared with those in the United Provinces and the Punjab, but certain districts suffered severely. In Saran some 11,000 persons died in April alone and in Patna district the mortality during that month was 7800. Inoculation is still looked upon with great disfavour, and though the report states that it appears to be gradually gaining in popularity the returns show that only a few thousand people submit themselves yearly to this measure of precaution. Outside Calcutta the inoculations were 2766, of which a considerable number were performed in the Gaya Jail. The adult population still regards inoculation with suspicion, though the more enlightened do not so much object to presenting their children. The measures taken to check an epidemic are such as appeal to the people themselves. Evacuation is principally relied upon and in rural areas the villagers readily carry this out. Chemical disinfection has practically been given up; it is resorted to only in special cases, where it is asked for and where it can be properly supervised. An effort is being made to instruct the people regarding preventive measures by the distribution of leaflets in the vernacular. In the board schools of the Saran district the students are taught the first principles of prevention, and their knowledge is tested on the occasion of each inspection. Popular lectures have also been given, but it must take time to break down the ignorance of the mass of the people. The campaign against rats started in 1905 was suspended for three reasons. In the first place it was found to involve great expense; then, although millions of rats were destroyed, the daily returns of numbers killed showed no signs of diminishing; and it was believed that the people would take to this measure without official aid, as they saw that the experiment was a success by causing a decrease in plague. It is not stated whether this anticipation was realised. In Calcutta the number of rats killed was very large, a small reward being given on presentation of batches of tails, but the special health officer doubts whether any permanent impression has been made upon the rat population of the city. Bengal as a whole cannot be said to have been badly afflicted with plague and there is not the need for the special measures which have had to be taken in other provinces. If certain districts in Behar could be purged of the disease the mortality returns would be very low, though we must expect to see some thousands of deaths in Calcutta yearly until the sanitary condition of the native town is improved. When the great scheme for opening out the overcrowded areas is given effect to the worst effects of plague should disappear.

Sanitation of Mussooree.

Sir John Hewitt, Lieutenant-Governor of the United Provinces, has just visited the important hill station of Mussooree which is the summer headquarters of the 7th (Meerut) Division and has given to the municipal authorities a subsidy of Rs.25,000 (£1562) a year for six years towards sanitation and the new piped water installation.

Burial Grounds in Calcutta.

The disposal, by burial or otherwise, of the dead is always a difficult problem and the Calcutta health officer, Dr. T. F. Pearse, has issued a tabulated list of the burial grounds and burning ghats within and without the city that are used for the disposal of the dead bodies of persons belonging to Calcutta. From this list it is ascertained that there are in all over 200 such burial grounds and burning ghats. As regards the latter, there are in all only three burning ghats, comprising the Nimtollah and Kasee Mitter burning ghats in Strand Bank-road and the Shamnagore burning ghat in Tollygunge. These three ghats are under the control of the corporation. Regarding the burial grounds, there are altogether 199 grounds used for the burial of the dead. These are classified under several heads. Six of them are under municipal control. Of other public burial grounds there are 37, five controlled by the Christian burial board, nine by the Mahomedan burial board, while the remaining 23 are Government burial grounds. There are a large number of private family burial grounds, comprising nearly half the entire total. Of the 49 which are registered six are for public use and 43 for family use only. In all 149 burial grounds are contained in the above and these constitute the entire number of grounds in use, the remaining being no longer in use. Of the total number of 199 burial grounds, the Mahomedan community alone have 127 grounds for the disposal of their dead, including both public and private grounds, in and out of use. There are only a few Hindu burial grounds and the remainder consist of burial grounds for all other races and creeds, and include the crematorium which is open to all creeds and castes.

Permanganate of Potassium and Snake-bite.

The lancet or permanganate of potassium treatment is generally accepted nowadays as the best of many remedies for snake-bite. The annual report of the Sanitary Commissioner of the United Provinces mentions the case of a sub-inspector of police who was bitten by a large cobra on the hand. A friend slit up the wound and rubbed in the permanganate of potassium crystals, and the man declared that he "undoubtedly owed his life to the prompt action taken."

Plague in the United Provinces.

Some interesting statistics concerning plague are given in the latest report of the Sanitary Commissioner of the United Provinces. The mortality from plague in 1907–08 reached the high figure of 328,862 deaths, a total not far short of that recorded in the bad plague year of 1905. Almora had the distinction of being the only district which did not return a single death from this cause, but Jalaun, Banda, Jhansi, Naini Tal, Hamirpur, and Garhwal were also practically free from the disease. Muzaffarnagar, on the other hand, reported no less than 48,859 deaths and a death-rate of 55·70. Only 14 towns out of 106 with a population of 10,000 and upwards were entirely immune, Gangoh (Saharanpur) having the highest death-rate (112·63) and Kairana (Muzaffarnagar) the next (110·65). The report states that the greatest impetus was given to inoculation during the year, great facilities being afforded to anyone who sought this form of protection. The result was that 34,169 persons were inoculated, against 1846 in 1906. Only eight persons are reported to have died from plague after inoculation, four in Moradabad, two in Bareilly, and one each in the Meerut and Allahabad districts. The four persons at Moradabad were inoculated, it appears, only three or four days before death and were "probably in the inoculation stage of disease."

Sept. 2nd.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Melbourne Hospital.

THE sixty-first annual report of this institution is satisfactory, the expenditure only exceeding the income for 1907 by £336. The total number of patients treated was 26,558, including 5333 in-patients. 136 cases of consumption and 168 of cancer were treated during the year. The committee drew attention to the fact that a large proportion of the consumptives were in very advanced stages and the mortality was very excessive. They were undesirable cases in a general hospital and it was hoped that some other provision would be made for them. There are at present 262 beds for consumptives provided by the Government in various institutions. This provision is quite inadequate. A return presented to the committee showed that the number of in-patients contributing to their maintenance for the year ending June 30th, 1908, was as follows: Contributed nothing, 4270; contributed up to 2*s.* 6*d.* per week, 153; contributed up to 5*s.* per week, 320; contributed up to 7*s.* 6*d.* per week, 57; contributed up to 10*s.* per week, 236; contributed up to 15*s.* per week, 55; contributed up to 20*s.* per week, 172; contributed up to 25*s.* per week, 3; and contributed up to 30*s.* per week, 53. No difference is made in the treatment of those who contribute and others. Complaint was recently made at the Alyned Hospital that patients in the paying wards were allowed certain privileges. The secretary has replied that the only difference made in their favour was permission to see visitors every day. This has now been abolished.

Railway Disaster.

After a protracted inquiry the coroner's jury returned a verdict of manslaughter against the engine-drivers of the two engines on the Bendigo express which collided with a stationary train on Easter Monday. A similar verdict was returned against the station master at Braybrook Junction where the accident occurred. Particulars of injuries are now available. 413 claims were lodged, 301 of these being by passengers in the stationary train and 108 from passengers by the express. Four were made by persons standing on the station platform. The claims have been carefully classified and all the claimants examined on behalf of the railway department. The list works out as follows. From shock only, 38 per cent.; bodily injuries, pains, &c., 14 per cent.; insomnia, nervousness, headache, &c., 13 per cent.; spinal injury, 12 per cent.; fractures, 9 per cent.; cuts, bruises, abrasions, 9 per cent.; injuries to head, 4 per cent.; and internal injuries, 1 per cent. 44 persons were killed on the spot or succumbed within a few days. It is estimated that the accident will cost the Victorian Government £250,000.

Proposed Home for Consumptives.

Dr. R. H. J. Fetherston, the health officer of the city of Prahran, a southern industrial suburb of Melbourne, has urged his council to provide a home for advanced cases of consumption amongst the really destitute. The council applied for a block of land for the purpose but local opposition was so strong that the request was refused, notwithstanding that it was supported by Dr. W. P. Norris, the chairman of the Board of Public Health. The opposition was based on the well-known grounds of danger of infection.

Prevention of Consumption.

An important conference of metropolitan municipalities was held in the Collingwood town hall (Melbourne) on June 29th. Upwards of 750 delegates attended, the object being an effort by the Collingwood council to initiate joint action for the provision of accommodation for advanced cases of tuberculosis. Councillor Rain moved:—

That in the opinion of this conference assembled from the Melbourne and metropolitan municipalities it is necessary that united action should be taken to deal with the scourge of tuberculosis, and that we proceed to discuss the question and to take the best means to act accordingly.

An animated discussion followed in which various difficulties were pointed out, and ultimately it was decided to meet again and, in company with the medical officers of health, to devise a plan of campaign. Dr. Norris, chairman of the Board of Public Health, said there were living in Melbourne year in and year out about 2500 consumptives and of these about 2000 needed some public assistance. In the last few years the mortality from consumption had fallen in Melbourne from 1000 to 600. It might be that 500 advanced cases required beds, and allowing six months for each it would be necessary to provide 250 beds. Sydney had 300 beds for advanced consumptives, and £10,000 or £15,000 were being spent on a new institution. Notification already in force would be the first step towards securing accommodation at an invalid home or a sanatorium.

Tuberculous Cows.

The Perth Central Board of Health has been actively engaged in a crusade against infected milch cows. The department resolved to apply the tuberculin test to dairy herds in the metropolitan area, and a veterinary officer carried out the task. The result has exceeded all expectations. In one dairy 20 out of 726 cows were destroyed, and in another five out of eight were declared unfit to supply milk for human consumption. Altogether in four dairies 41 cows were ordered for destruction. One of the owners affected remarked, "Experts admit that tuberculosis exists in a mild form in most cattle and that the application of the test has the inevitable effect of increasing the temperature. The milk, however, is not affected, and if the Health Department continues its policy of destruction the milk-supply of the metropolis will be seriously threatened."

The Adulteration of Food.

An interesting return has been prepared by the Victorian Board of Public Health of the analyses made under the Pure Foods Act during the past two years. In 1906 983 samples were examined and adulteration was found in 245, the bulk of this being accounted for by samples of adulterated milk. In 1907 the number of examinations rose to 2663, and of these 358 were regarded as below the standards. Milk again contributed most largely to this total. According to this return there is no very appreciable amount of adulteration in the articles analysed, which covered most of the ordinary daily foodstuffs.

Charitable Bequest.

Under the will of the late Mr. Felton an annual sum is distributed to charitable institutions. The awards for 1908 have just been made, the total sum available being £3700. Mr. Felton was the senior partner of Felton, Grimwade, and Co., a well-known firm of wholesale and manufacturing chemists.

Epidemic of Poliomyelitis Acuta.

An epidemic of acute poliomyelitis has been noted during

the last two or three months in Melbourne. Upwards of 40 cases are known to have occurred. Dr. Douglas Stephens is making a special investigation of the subject and his conclusions will be put before the Medical Congress in October next.

Juvenile Depravity.

A somewhat remarkable case of moral perversion is reported from Tasmania. Two children, aged eight and two and a half years respectively, were sent out in each other's company. The elder boy returned alone and stated that his little brother had been "taken by a hyena into the bush." On being pressed he varied his story by saying that the child had been riding on his back and fell off. Finally, the body of the younger child was found hidden in a hole, with extensive fracture of the skull. The elder boy then confessed that he had got tired of carrying his small brother and had hit him on the head with a log of wood and hidden the body where it was found.

Pure Milk.

A deputation of medical men recently waited on the Premier of Victoria to ask for his support in the formation of an institution for the supply of pure milk to infants. The speakers were Mr. G. A. Syme, Dr. A. Jeffreys Wood, Dr. J. Jamieson, Dr. Barrett, Dr. J. W. Springthorpe, and Dr. T. Cherry. The cost of beginning operations was estimated to be £3000, and the Premier practically undertook to find half that amount while the remainder is to be got by voluntary contributions. A protest has been made by a well-known dairy company who "respectfully urge that if a model dairy farm is to be established it be done by the Government through the Department of Agriculture. It will then be under responsible and expert control, and its use as an object-lesson open to commercial criticism. The present proposal places its management under the control of a body composed of scientific men, who would be responsible to nobody and who could, no doubt, if allowed to spend enough money, produce clean milk suitable for infants, but the question of its actual cost would be lost sight of, and the real value of the object-lesson would be lost. If the trade were then expected to follow in the footsteps laid down for them in this way, the immediate result would be a material increase in the price of milk to the consumer, which would be a doubtful way of assisting the poor mothers of this city. The proposed institute would have more than sufficient scope for its energies and its money if it devoted its attention to the question of supervision and distribution, the establishment of depôts in congested centres, and the education of the mothers as to the value of clean milk in the rearing of children, and the care necessary to preserve it when they get it into their houses."

August 18th.

Obituary.

HAROLD LESLIE BARNARD, M.B., M.S. LOND., F.R.C.S. ENG., L.R.C.P. LOND.,

SURGEON IN CHARGE OF OUT-PATIENTS AT THE LONDON HOSPITAL.

THE late Mr. Harold Leslie Barnard, whose death occurred in his forty-first year on August 13th, was a distinguished son of the London Hospital who had worthily won his place upon its staff. He was born in Highbury in 1868 and was a great-nephew of Michael Faraday. He had not intended originally to follow medicine, for after a year's residence in America he worked in the City for three years, but at the age of 20 entered the London Hospital where he gained the first year scholarship. This success was followed up by a career of continuous distinction. Four years after his entry he qualified M.R.C.S., L.R.C.P., and in 1895, three years later, he graduated in both medicine and surgery at the University of London, his B.S. winning him first-class honours. In the same year he took the Fellowship at the Royal College of Surgeons of England and the next year the M.S. at the University of London. During this period he held in succession all the resident appointments at his hospital, to which he became subsequently surgical registrar, and also demonstrator of physiology, and assistant demonstrator of anatomy in the medical school. His first full staff appointment was that of assistant surgeon to the Metropolitan Hospital, a post which he relinquished in 1900 when he was appointed assistant surgeon and also surgical tutor at the London Hospital. He held this tutorship until 1904, when he took up the post of demonstrator of surgical pathology which he retained until his death. He was elected surgeon to the hospital with charge of out-patients in July, 1907. It can be said unhesitatingly of Mr. Barnard that he was possessed of the real scientific spirit and an endless capacity for work. Both in physiology and in surgery he had made such a mark as leaves little room to doubt that he would have earned a wide reputation if death had spared him to fulfil a life which in far too short a time had achieved so much. The work which he did in conjunction with Dr. Leonard Hill on hæmodynamics resulted in many valuable observations and also in the Hill and Barnard's sphygmomanometer which was invented at a time when the clinical importance of the scientific measurement of blood pressure had not attained that recognition which it now enjoys. His principal surgical work was concerned with the abdomen and upon intestinal obstruction he wrote with an undoubted authority. The article in Allbutt's "System of Medicine" on that subject from his pen is likely to remain as a classic piece of literature, founded as it is upon skilful and painstaking investigation. Subdiaphragmatic abscess and appendicitis engaged much of his attention and he contributed a paper on the former subject to the Royal Society of Medicine. His important communication upon "The Simulation of Acute Peritonitis by Pleuro-pneumonic Disease" appeared in our columns in 1902. He was an excellent operator as well as an excellent observer. A man so prominently connected with the teaching side of the London Hospital and so popular as was Harold Barnard cannot fail to be sadly missed by his students and colleagues. He entered fully into the life of his medical school, as was evidenced by his presidency of its swimming club and vice-presidency of its football, boxing, fencing, and gymnastic clubs, and also of the Hospital Medical Society. His many activities were carried through in defiance of a poor physique, and it is a general opinion amongst his friends that his whole-hearted devotion to work was at least a factor in his untimely death which followed upon cardiac trouble. His funeral took place in Highgate Old Cemetery on August 17th.

EDWARD PERCY PATON, M.D., M.S. LOND., F.R.C.S. ENG.,

DEAN OF THE WESTMINSTER HOSPITAL MEDICAL SCHOOL.

THE teaching staff of Westminster Hospital, which sustained such a severe loss in the death of Bertram Abrahams earlier in the year, has again to mourn an exceptionally brilliant colleague, the sadness of whose early death was intensified by the long and painful illness which led up to it. Percy Paton was one of those rare men whose academical career has been a triumphant march through the honours lists and who have yet emerged from it with a practical and well-balanced mind on which a deep store of learning has left no reproach of bookishness. He was born 41 years ago in Canonbury and received his medical education at St. Bartholomew's, where he enjoyed a distinguished career as a student and became an assistant demonstrator of anatomy. He qualified under the Colleges in 1889 and in the same year took his degree at the University of London, obtaining the University scholarship and gold medal in obstetric medicine and honours in medicine and forensic medicine. He then became a house surgeon at his hospital and later surgical registrar and anæsthetist at the Hospital for Sick Children, Great Ormond-street. In 1891 he proceeded to the M.D. at the University of London, but, deciding on a surgical career, in the following year he passed the F.R.C.S. examination and also took the London B.S. which gained him the University scholarship and gold medal in surgery, a success which he followed up by obtaining the Mastership in 1894. In 1896 he started his connexion with Westminster Hospital, greatly to the advantage of its school, by obtaining the posts of surgical registrar and senior demonstrator of anatomy. Three years later he became an assistant surgeon and in 1906 surgeon in charge of out-patients, after having been elected Dean of the medical school in 1904. These two posts he held until his death. He was also lecturer in surgical pathology at Westminster Hospital and was an examiner to the Society of Apothecaries, first in anatomy and later in surgery. He gained a wider experience in practical surgery than many men of his seniority by his appointment to a surgeoncy at the Mildmay Mission Hospital, of which his strong religious convictions made him a devoted

servant. He also gave much of his spare time to mission work in his own neighbourhood. He was a man of ability far greater than the average, with a precise and critical mind which made him a really illuminating diagnostician. He was, moreover, as successful a teacher as he was a skilful surgeon. For these qualities he deserves more credit than is due to mere natural ability, for he developed them under the handicap of a poor physique and ill-health that was almost constant. The circumstances of his fatal illness were almost tragic. In January last whilst at hospital he was attacked with a rapidly ascending spinal paralysis which was apparently of influenzal origin, for no organic lesion of the nervous system was demonstrated after his death. This illness threatened to prove fatal in a few days, but the immediate danger to life subsided, leaving him, however, with a complete paraplegia below the waist. Since then he was "warded" in Westminster Hospital until his death on Sept. 10th. During the eight months of his illness he suffered literal agony from recurrent painful spasms of his legs, and for the last fortnight of his life he had to be kept almost continuously under morphine and chloroform, so that when his end came it was indeed a merciful release. But this makes it none the less to be regretted that such a useful and efficient life should be cut off in the very blossom of its achievement, and the deep sympathies of many are with his relatives and his hospital in their bereavement. Mr. Paton was a bachelor. Both his parents predeceased him but he is survived by seven brothers and sisters.

MARY CAROLINE HAMILTON, L.R.C.P. & S. EDIN., L.F.P.S. GLASG.

THE death of Miss Mary Caroline Hamilton, which occurred at Edinburgh on Sept. 7th, after an operation for appendicitis, is announced. The deceased was the daughter of the late Sir Robert Hamilton of Coleherne Court, London. She studied medicine at the Edinburgh School of Medicine, taking her qualifications in 1905. After holding appointments in Edinburgh and Nottingham Miss Hamilton went to St. Agnes and entered into partnership with Miss N. B. Ievers. Miss Hamilton's death is felt as a great loss at St. Agnes where she was a much liked practitioner.

EMILY ELIZABETH EBERLE, M.A., M.B., B.CH., B.A.O. R.U.I., F.R.C.S. IREL.

Dr. Emily Elizabeth Eberle, of 17, Oakfield-road, Clifton, Bristol, died on Sept. 12th at Dublin, where she was staying on a visit. She was the eldest daughter of the late Rev. J. A. Eberle of Dublin and studied medicine at the Royal College of Surgeons in Ireland. She graduated M.A. of the Royal University of Ireland in 1889 and in 1894 obtained the M.B., B.Ch., B.A.O. degrees of the same University; in the latter year Miss Eberle also was admitted F.R.C.S. Irel. Shortly after obtaining her degrees Miss Eberle commenced practice in Clifton. She was for some years a member of the honorary staff of the Royal Hospital for Children and Women, Bristol, the Southwell Maternity Home, and the Read Dispensary. Miss Eberle was highly esteemed in Bristol and Clifton; she was kind and sympathetic and always ready to help any good cause. Much sympathy is felt for her brother (Alderman J. F. Eberle of Bristol) and the family in their breavement.

Medical News.

PRIZES IN BELGIAN UNIVERSITIES.—In the recent annual competitions for honours amongst the medical faculties of Belgium the Ghent students take the best places. Of 17 prizes Ghent carried off ten, Louvain three, Brussels two, and Liége two. One of the Ghent prize-winners was a woman student who graduated as doctor of medicine, surgery, and midwifery two years ago.

THE LATE MR. DAVID DRAFFIN.—Mr. David Kinnear Draffin died at his residence, Nixon Villa, Merthyr Vale (Glamorganshire), on Sept. 14th, in his fifty-third year, after a short illness. Mr. Draffin held the qualifications of L.R.C.P. & S. Edin., L.F.P.S. Glasg., and L.R.C.P. & S. Irel. He went to Merthyr Vale about 17 years ago and was medical officer of the Merthyr Vale collieries. He was very highly esteemed in Merthyr Vale and was particularly beloved by the poor to whom he was a true benefactor. During the "strike" in 1898 he did much to alleviate the prevalent suffering. The funeral was largely attended.

CONGRESS OF THE ITALIAN MEDICAL SOCIETY.—The Italian Society of Internal Medicine will hold its eighteenth congress at Rome on Oct. 26th to 29th. The questions for discussion are: (1) The Clinical Significance of Cardiac Arrhythmiæ; (2) Family Neuropathies; and (3) the Consequences of Hyper-alimentation.

THE CARDIFF INFIRMARY. — Colonel Bruce Vaughan, chairman of the house committee of the Cardiff Infirmary, announced at the meeting held on Sept. 16th that an anonymous gift of £10,000 had been received from a Glamorganshire coal owner towards the new wing. An effort is being made to raise an additional income of £7000 per annum, and last May Mr. J. Cory promised to add 25 per cent. to all sums received. In response a Welsh colliery owner sent £1000, Mrs. J. Nixon sent 10,000 guineas, Mr. H. Webb subscribed £3000, and another £1000 was contributed anonymously. The latest gift brings the total to £25,700.

HONG-KONG: PUBLIC HEALTH AND SANITATION, HOSPITALS AND MEDICAL INSTITUTIONS.—According to the report of the Governor, Sir F. J. D. Lugard, K.C.M.G., for the year 1907, considerable progress has been made in rendering existing domestic buildings rat-proof as a preventive of plague. During the year there were 198 deaths from plague, compared with 842 in 1906 and 287 in 1905. There were 1825 deaths from respiratory diseases amongst the Chinese; 655 of these deaths were due to pulmonary tuberculosis, a percentage of 9·6 of the total deaths amongst that community. Beri-beri caused 562 deaths—a high figure. The deaths from malaria were 579, forming an increase on 1906 and 1905, which it is hoped will only be temporary. The average number of deaths from this disease has fallen from 526 in the quinquennium 1898–1902 to 383 in the quinquennium 1903–1907. Military returns of admissions to hospital for malaria show a marked reduction in the incidence of this disease. Government hospitals consist of the Civil Hospital, to which is attached an isolated maternity hospital, the Victoria Hospital for Women and Children, the Kennedy Town Infectious Diseases Hospital, and the hulk *Hygeia* used mainly for the treatment of small-pox. The Civil Hospital contains 150 beds in 19 wards. 2711 in-patients and 17,302 out-patients were treated during the year 1907. 243 cases of malarial fever were admitted, as against 239 in 1906 and 267 in 1905. The maternity hospital contains six beds for Europeans and four for Asiatics. 87 confinements occurred during the year. The Victoria Hospital at the Peak contains 41 beds. During 1907 211 patients were under treatment. Kennedy Town Hospital contains 26 beds. In 1907 63 cases were treated, of which 16 were plague. On the *Hygeia* 167 cases were treated, of which 96 were small-pox. In the lunatic asylum 222 patients of all races were treated during 1907 and there were 13 deaths. The Tung Wah Hospital, opened in 1872, is mainly supported by the voluntary subscriptions of Chinese but receives an annual grant of $8000 from the Government. Only Chinese are treated in this institution which takes the place of a poor-house and hospital for Chinese sick and destitute. Various other services not appertaining to a hospital are performed by the institution, such as the free burial of the poor, the repatriation of destitutes, and the organisation of charitable relief in emergencies. Chinese as well as European methods of treatment are employed in accordance with the wishes expressed by the patients or their friends. About half the number are now treated by Western methods and the number is steadily increasing. The hospital is managed by a committee of Chinese gentlemen annually elected, their appointment being submitted to the Governor for confirmation; it is under the direct charge of a Chinese resident surgeon paid by the Government, and is under the supervision of a visiting physician who is a member of the Medical Department. The Hong-Kong College of Medicine was founded in 1887. 102 students have been enrolled up to the end of 1907 and of these 33 have become qualified licentiates and have obtained various posts under Government and elsewhere.

The institution is of great value in spreading a knowledge of Western medical science among the Chinese; and in addition to the employment of certain of the licentiates in the public service and in the Chinese dispensaries the senior students have frequently been made use of for various purposes during epidemics. A Government grant-in-aid of $2500 is made to the College to be used as honorariums to the lecturers, who are either Government officials or medical practitioners in local practice. Steps are at present being taken for the provision of adequate buildings for the purposes of the College which has hitherto carried on its work in various lecture rooms and laboratories placed at its disposal by hospitals and other institutions in different parts of the city.

THE HEALTH OF NORTH DEVON IN 1907.—Dr. E. J. Slade-King in his summary of the reports of the medical officers of health of North Devon for 1907, which he has just presented to the Devon county council, states that on an estimated population of 146,775 the death-rate was 14·3, compared with 13·7 in 1906. The annual death-rate per 1000 births under one year of age was 104; in 1906 it was 98·7. 96 deaths occurred from zymotic diseases, giving a death-rate of 0·7 per 1000. Six deaths were due to enteric fever. 467 cases of infectious disease were notified, against 430 in 1906. 101 deaths were due to pulmonary tuberculosis, equal to a death-rate of 0·6 per 1000; in 1901 there were 150 deaths from this disease and in 1906 the number was 123. 121 deaths were caused by cancer, compared with 123 in 1906. The birth-rate was 19·7 per 1000, as against 21 per 1000 in 1906.

THE EDUCATION ACT IN GLAMORGAN.—The report of the county medical officer of Glamorgan on the medical inspection of children in public elementary schools has recently been issued. After detailing Section 13 of the Education (Administrative Provisions) Act, 1907, and the steps taken by the local education committee to put that section into operation, a copy of a circular letter is printed which has been addressed to the head teachers of each department of all the schools under the jurisdiction of the education committee advising them as to the procedure to be followed. The work of inspection was commenced on April 27th last and was continued regularly up to the end of July. During the 12 weeks 117 schools were visited and 4021 children were medically examined. Of these, 1979 were boys and 2042 were girls and the results are tabulated in six tables accompanying the report. No fewer than 1360, or 33·8 per cent., of the 4021 children examined in the 117 schools were found with defects capable of interfering to a marked degree with educational progress and this must be regarded as a serious pronouncement. The medical officer thinks that with regard to the proper treatment of defects of vision, defects of teeth, advanced ringworm, adenoids, and enlarged tonsils, there will be considerable difficulty in securing adequate treatment, for, as he adds, "such work is tedious and exacting and consequently the fee it demands is heavy to a large proportion of the working-class people." The medical officer also acknowledges the valuable coöperation in the work of the teachers.

THE WHITE CROSS OF ST. JOHN.—In connexion with the formation of the Devonport Centre of the St. John Ambulance Association Major Robert J. Blackham, R.A.M.C., delivered an inspiring lecture on the White Cross of St. John and its association with the ambulance movement. With the object of reaching a large and influential section of the community who did not hear the lecture it has now been published in pamphlet form with a preface written by the mayor of Devonport. The Red Cross movement of the "sixties," as everyone knows, gave the opportunity to the Order of St. John of Jerusalem to re-establish and to continue the medical and charitable work which had always been a feature of the Order, though it was not till 1877 that the St. John Ambulance Association came into existence as a department of the Order of St. John. In 1888 the Association received its charter from her late Majesty Queen Victoria and the members of the Royal family have ever since taken the keenest interest in its work. In tracing the connexion between the ambulance movement and the Christian hospital founded in 1056 at Jerusalem for the relief of poor pilgrims of all nations who visited the Holy City, Major Blackham has performed a task for which all who read his lecture will be grateful. As he points out, members of the Royal Army Medical Corps must have a very kindly feeling for the Order of St. John, "as these gallant soldier-priests were the first to see that the healing of a man's wounds was a knightly service, and that it was just as much a soldier's work to heal a sick man in a hospital as to kill a healthy one in the field." Major Blackham concludes his lecture with the words: "Thrones and empires, sceptres and States may rise and fall, but the White Cross of St. John, the guerdon of the injured, will never pass away while Christian charity remains to us, or sympathy with human suffering endures."

ANKYLOSTOMIASIS IN COSTA RICA.—Mr. F. N. Cox, H.M. Consul, reports that in the country districts of the interior it has been found that ankylostomiasis, or hookworm disease, has become a widespread malady. A commission of medical men has made a tour in the affected districts and some 3700 patients have been treated with very good effects. Similar tours are to be made annually with a view, in addition to treating any patients that there may be, of teaching the country people to take preventive measures against this disease.

BOOKS, ETC., RECEIVED.

APPLETON AND CO., London.

General Surgery. A Presentation of the Scientific Principles upon which the Practice of Modern Surgery is Based. By Ehrich Lexer, M.D., Professor of Surgery, University of Königsberg. Edited by Arthur Dean Bevan, M.D., Professor and Head of the Department of Surgery, Rush Medical College in Affiliation with the University of Chicago. An Authorised Translation of the Second German Edition. By Dean Lewis, M.D., Assistant Professor of Surgery, Rush Medical College in Affiliation with the University of Chicago. Price 25s. net.

CHURCHILL, J. AND A., 7, Great Marlborough-street, London, W.

The Cell as the Unit of Life and Other Lectures delivered at the Royal Institution, London, 1899–1902. An Introduction to Biology. By the late Allan Macfadyen, M.D., B.Sc., Fullerian Professor of Physiology, Royal Institution, London, and Head of the Bacteriological Department, Lister Institute of Preventive Medicine, London. Edited by R. Tanner Hewlett, M.D., F.R.C.P., D.P.H., Professor of General Pathology and Bacteriology, King's College, London. Price 7s. 6d. net.

CLARENDON PRESS, Oxford. (FROWDE, HENRY, London, New York, and Toronto.)

An Alabama Student and Other Biographical Essays. By William Osler, M.D., F.R.S., Regius Professor of Medicine, Oxford; Honorary Professor of Medicine, Johns Hopkins University, Baltimore. Price 7s. 6d. net.

FISCHER, GUSTAV, Jena.

Beiträge zur Pathologie des Stoffwechsels bei Psychosen. Zweiter Teil: Die Epilepsie. (Aus der Universitäts-Nervenklinik in Halle a.S. Direktor: Geh. Med.-Rat Prof. Dr. Anton.) Von Dr. Max Kauffmann, Privatdozent für Psychiatrie und Neurologie an der Universität Halle a.S. Price M.6.

Einführung in die Histologie und Histopathologie des Nervensystems. Acht Vorlesungen. Von Dr. Paul Schröder, Privatdozent, Oberarzt der Kgl. Psychiatrischen und Nervenklinik zu Breslau. Price M.2.80.

Ueber die Genese des Carcinoms. Von H. Apolant und P. Ehrlich in Frankfurt a.Main. (Abdruck aus Verhandlungen der Deutschen Pathologischen Gesellschaft, 12. Tagung, 1908.) Price M.1.

Ambulatorische Extensionsbehandlung der Oberen Extremität. Von Dr. O. Borchgrevink, Chirurg. Oberarzt des Diakonenhospitals zu Christiania. Price M.4.50.

HIRSCHWALD, AUGUST, Unter den Linden, 68, Berlin, N.W.

Untersuchungen über Zichorie. Von Dr. Ferdinand Hueppe, Professor der Hygiene und Vorstand der Allgemeinen Untersuchungs-Anstalt für Lebens-Mittel an der Deutschen Universität in Prag. Price M.1.

Grundriss der Psychiatrischen Diagnostik, nebst einem Anhang enthaltend die für den Psychiater wichtigsten Gesetzesbestimmungen und eine Uebersicht der gebräuchlichsten Schlafmittel. Von. Prof. Dr. Raecke, Privatdozent und Oberarzt der Psychiatrischen und Nervenklinik in Kiel. Price M.3.

KABITZSCH, CURT (A. STUBER'S VERLAG), Würzburg.

Einfache Hülfsmittel zur Ausführung bakteriologischer Untersuchungen. Von Dr. R. Abel, Geheimer Medizinalrat in Berlin und Dr. M. Ficker, Professor in Berlin. 2. Auflage. Price M.1.20.

Aerztliche Beredsamkeit. Von Dr. med. Henry Hughes, Arzt in Bad Soden a.T. Price M.1.

NISBET, JAMES AND CO., LIMITED, 22, Berners-street, London, W.

Common Affections of the Liver. By W. Hale White, M.D., F.R.C.P., Senior Physician to and Lecturer on Medicine at Guy's Hospital. Price 4s. 6d. net.

WILEY, JOHN, AND SONS, New York. (CHAPMAN AND HALL, LIMITED, London.)

Manual of Psychiatry. By J. Rogues de Fursac, M.D., formerly Chief of Clinic at the Medical Faculty of Paris, Physician in Chief of the Public Insane Asylums of the Seine Department. Authorised Translation from the French. By A. J. Rosanoff, M.D., Second Assistant Physician, Kings Park State Hospital, N.Y. Second American from the Second French Edition. Revised and enlarged. Price, cloth, $2.50 or 10s. 6d. net.

Text-Book of Physiological Chemistry in Thirty Lectures. By Emil

Abderhalden, O. Professor für Physiologie des Physiologischen Instituts der Tierärztlichen Hochschule Berlin und Universitäts-Professor. Translated by William T. Hall, Instructor in Chemistry, Massachusetts Institute of Technology, and George Defren. First edition. First thousand. Price, cloth, $5.00 net or 21s. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BERGIN, FRANK GOWER, L.R.C.P. Lond., M.R.C.S., has been appointed Assistant Skiagraphist at the Bristol General Hospital.

BURNETT, R., M.B., B.S. Vict., has been appointed Medical Officer to the Borough of Bury.

CALDWELL, A. G., M.D. R.U.I., has been appointed School Medical Officer for Stockport.

CAPPE, H. N., M.R.C.S., L.R.C.P. Lond., has been appointed Senior Medical Officer at the Brookwood Asylum.

GARDEN, DAVID S., M.B., Ch.B., has been appointed Resident Medical Officer at the Aberdeen Royal Infirmary.

JONES, J., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Pontardawe District of the county of Glamorgan.

LLOYD, B., M.B., B.S. Lond., D.P.H. Lond., has been appointed Assistant Medical Officer of Health and Medical Inspector of Schools for Newport (Mon.).

MACPHAIL, J. M., M.B., B.S. Edin., has been appointed Resident Medical Officer to the Union Hospital, Hope, near Eccles.

MUTERER, JAMES G., M.B., Ch.B., has been appointed Resident Medical Officer at the Aberdeen Royal Infirmary.

TURTON, J. R. H., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Resident Medical Officer to the London Temperance Hospital.

WELLS, J. DOUGLAS, M.B., Ch.B. Edin., has been appointed Medical Officer to the Billericay Workhouse and Infirmary, and Medical Officer to the District Infectious Hospital of the Billericay Rural District Council.

WILL, JOHN H., M.B., Ch.B., has been appointed Resident Medical Officer at the Aberdeen Royal Infirmary.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BIRKENHEAD BOROUGH HOSPITAL.—Junior Resident House Surgeon. Salary £80 and notification fees.

BRIGHTON, SUSSEX COUNTY HOSPITAL.—House Surgeon, unmarried. Salary £120 per annum, with board, residence, and washing. Also Second House Surgeon, unmarried. Salary £60 per annum, with apartments, board, and laundry.

BRISTOL ROYAL INFIRMARY.—Resident Casualty Officer for six months. Salary at rate of £50 per annum, with board, lodging, and washing. Also House Surgeon. Salary £130 per annum, with apartments, board, and laundry. Also Honorary Dental Anæsthetist.

CANCER HOSPITAL, Fulham-road, London, S.W.—Assistant Anæsthetist. Salary 25 guineas per annum.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road.—Registrar.

CHESTER COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £160 per annum, with board, lodging, and washing.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physicians for six months. Salary at rate of £50 per annum, with board, washing, and residence. Also Resident Medical Officer. Salary £120 per annum, with board, &c. Also Pathologist. Salary 100 guineas per annum.

DREADNOUGHT HOSPITAL, Greenwich.—Two House Physicians and Two House Surgeons for six months. Salary £50 per annum, with board, residence, and washing.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—House Surgeon for six months. Salary £25, with board, residence, laundry, &c. Also Second Medical Officer for six months. Salary at rate of £40 per annum, with luncheon and tea provided.

GORDON HOSPITAL FOR FISTULA, &c., Vauxhall Bridge-road, S.W.—Anæsthetist.

HAMPSTEAD GENERAL HOSPITAL.—House Physician and House Surgeon, both for six months. Salary at rate of £70 per annum, with board and residence. Also Physician to Out-patients, Surgeon to Out-patients, and Ophthalmic Surgeon to Out-patients.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians for six months. Salary £25. Also Resident Medical Officer. Salary £200 per annum, with board and residence. Also Assistant Resident Medical Officer. Salary £100 per annum, with board and residence. Also Clinical Assistants for six months. Salary at rate of £100 per annum.

HUDDERSFIELD INFIRMARY.—Junior House Surgeon. Salary £60 per annum, with board, residence, and washing.

HULL AND SCULCOATES DISPENSARY.—Resident Surgeon. Salary £220 per annum, with house, gas, and coals.

HUNTINGDON COUNTY HOSPITAL.—House Surgeon. Salary at rate of £80 per annum, with board, &c.

ISLE OF MAN ASYLUM.—Assistant Medical Officer. Salary £150 per annum, with board, quarters, and washing.

JERSEY GENERAL DISPENSARY AND INFIRMARY.—Resident Medical Officer. Salary £120 per annum.

KING'S LYNN, WEST NORFOLK AND LYNN HOSPITAL.—House Surgeon. Salary £100.

LANCASTER, ROYAL LANCASTER INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with residence, board, attendance, and washing.

LEAMINGTON, WARNEFORD, LEAMINGTON, AND SOUTH WARWICKSHIRE GENERAL HOSPITAL.—Two Resident Medical Officers. Salary for Senior £100, and for Junior £65 per annum, with board, washing, and apartments.

LONDON HOSPITAL, Whitechapel, E.—Assistant Surgeon.

MANCHESTER, MONSALL FEVER HOSPITAL.—Third Medical Assistant. Salary £100 per annum, with board, lodgings, and washing.

MANDALAY MUNICIPALITY.—Health Officer. Salary Rs.600 (£40) per mensem.

NORTH SHIELDS, TYNEMOUTH VICTORIA JUBILEE INFIRMARY.—House Surgeon. Salary £100 per annum, with rooms, board, &c.

NORWICH, NORFOLK COUNTY ASYLUM, Thorpe.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, rising to £200, with board, lodging, washing, and attendance.

OLDHAM INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with board, residence, and washing.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Physician and House Surgeon for six months. Salary at rate of 50 guineas a year, with board and residence. Also Honorary Physician to Out-patients.

PENDLEBURY, MANCHESTER CHILDREN'S HOSPITAL.—Visiting Physician. Honorarium £100 per annum.

PRESTWICH COUNTY ASYLUM, Manchester.—Junior Assistant Medical Officer, unmarried. Salary £150, increasing to £250, with rations, apartments, and washing.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Examiner in Physiology. Also Examiner in Dental Surgery.

ROYAL NAVY, MEDICAL DEPARTMENT.—Fifteen Commissions.

SALFORD ROYAL HOSPITAL.—House Surgeon for six months. Salary at rate of £60 per annum, with board and residence.

SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Clinical Assistants.

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board and residence.

SOUTHWARK UNION INFIRMARY, East Dulwich-grove, S.E.—Assistant Medical Officer. Salary £100 per annum, with board, lodging, and washing.

TAUNTON, TAUNTON AND SOMERSET HOSPITAL.—Resident Assistant House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and laundry.

TOROSAY, PARISH OF.—Medical Officer. Salary £100 per annum.

VIRGINIA WATER, SURREY, HOLLOWAY SANATORIUM HOSPITAL FOR THE INSANE.—Junior Assistant Medical Officer (female). Salary £150 per annum, rising to £200, with board, lodging, laundry, attendance, &c.

WESTMINSTER HOSPITAL, Broad Sanctuary, S.W.—Fourth Assistant Physician.

WINSLEY, NEAR BATH, THREE COUNTIES SANATORIUM FOR CONSUMPTIVES.—Resident Medical Officer, unmarried. Salary £200, rising to £300.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy as Certifying Surgeon under the Factory and Workshop Act at Dervock, in the county of Antrim.

Births, Marriages, and Deaths.

BIRTHS.

CALLENDER.—On Sept. 18th, at Inverard, Sidcup, Kent, the wife of Thomas Marshall Callender, M.D., C.M., F.R.C.S. Edin., of a son.

GEDGE.—On Sept. 20th, at Pewsey, Wilts, the wife of Arthur Sydney Gedge, M.R.C.S., L.R.C.P., of a daughter.

HOULBROOK.—On Sept. 15th, at Bradwell, North Derbyshire, the wife of William E. Houlbrook, M.R.C.S. Eng., L.R.C.P. Lond., of a son.

SPRIGGS.—On Sept. 16th, at Bryanston-street, Portman-square, W., the wife of Edmund Ivens Spriggs, M.D., F.R.C.P., of a daughter.

MARRIAGES.

EVANS—BRIANT.—On Sept. 16th, at Brixton Independent Church, Brixton, S.W., Arthur H. Evans, M.S., F.R.C.S., of Harley-street, to Dorothy, younger daughter of Lawrence Briant, of Loughborough Park.

HIGHET—ROBINOW.—On Sept. 19th, at St. Margaret's Church, Altrincham, Cheshire, by the Vicar, the Rev. Hewlett Johnson, M.A., B.Sc., Hugh Campbell Highet, M.D., D.P.H., Principal Medical Officer, Local Government, Bangkok, Siam, to Emma, daughter of the late Max Robinow of Manchester, and of Mrs. Robinow of Hawthornden, Bowdon, Cheshire.

LUNN—PILDITCH.—On Sept. 16th, at St. Paul's (Church of the Venerable Bede), Jarrow-on-Tyne, by the Rev. J. Anderson-Robertson, B.A. (Oxon.), M.D. (Glasgow), uncle of the bridegroom, assisted by the Rev. C. R. J. Loxley, M.A., Rector of Jarrow, John Lunn, M.B., C.M., W.A.M.S., of Edinburgh, to Florence Gertrude, only daughter of Alfred Pilditch, of Jarrow-on-Tyne, and formerly of Froome-Selwood, Somerset, and Stonehouse, Devon.

WATNEY—CROSSLEY.—On Sept. 16th, at St. Thomas's Church, Belfast, Herbert Andrew Watney, M.B., B.S., son of the late Rev. James Watney, of Canwick, Lincoln, to Olive Emily, second daughter of the late Arthur C. Crossley of Belfast.

DEATHS.

CRANE.—On Sept. 20th, at Warwick-square, S.W., Charles Albert Crane, M.D., aged 65 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A POINT IN MEDICAL ETHICS.

"M.R.C.S., L.R.C.P." writes: "I shall be glad of your opinion in the following matter. I had been looking for a practice for some months at some seaside town, and I had inspected a number of practices in different parts of the country, but I could find none to suit me. I was given by an agent the name of a practice which was for sale at a seaside town which I will call X. The agent offered an interview with Dr. K., the vendor, who was away ill, but I refused this, saying that I could not contemplate buying the practice unless the house suited me. I then looked over the house, but as the house was quite unsuitable for my purpose I did not inspect the books or inquire into the details of the practice, but I wrote immediately to the agent to say that I had decided not to buy. After this I inspected practices in other towns, but I was unable to find any which I considered suitable. Ultimately I determined to start a practice for myself and I took a house in the seaside town X referred to above. In due course I called on all the medical men of the town, but when I was expecting their return calls I received a 'round robin' signed by five of the medical men saying, 'We, the undersigned, have decided that we cannot return your call. The reason for which you will readily understand.' Apparently the signatories consider that my visit to the house of Dr. K. should have precluded any attempt to settle in the town, although I have informed them that I did not examine any of the books of the practice and did not see the vendor, and I was even particularly careful not to make any inquiries in the town about the practice. I shall be glad to know your opinion of the matter and to have your advice as to the course I should pursue, especially as I find that the statement is now being spread that I made every possible investigation into the practice, both with the vendor and in the town. Can it be accepted that to view a medical man's house should prevent a medical man practising in the same town?"

*** The above statement seems to us to be a frank explanation of circumstances which ought to have prevented anything whatever in the nature of a combination against the medical man in question by his brother practitioners. If "M.R.C.S., L.R.C.P." had inquired into the details of the practice, or had attempted to obtain any information whatever which he could afterwards use to secure gratuitously a practice which he desired, of course the "round robin" would have been justified; but as inquiry would have shown that no inspection of the books had taken place we think that the document was an unfortunate one. In answer to the two questions put to us by "M.R.C.S., L.R.C.P." (1) We advise that the clear statement made to us as to the circumstances of the case should be sent not only to the five signatories to the "round robin" but to all the practitioners in the town and to the secretary of any local medical society or branch of the British Medical Association which may have its centre in the town. (2) It is obvious that to inspect a medical man's house cannot preclude him who makes the inspection from practising in the town if only because there might be two practices vacant simultaneously.—ED. L.

EARLY ENGLISH MEDICAL BOOKS.

To the Editor of THE LANCET.

SIR,—In reference to the correspondence which is appearing in your columns about early English medical books I should say that your correspondent, Dr. Oscar Jennings, is correct in his assumption that the "Governal of Health" is the earliest *printed* medical work in English. It was printed about 1489. The book was written by John of Burgundy, about whom very little is known for certain. So far as I know the earliest medical works in English are some fourteenth and fifteenth century manuscript translations of portions of Hippocrates and some translations into English of John of Burgundy's treatise "De Pestilentia." One of these dates from the fourteenth century and there are many others of the fifteenth century in the Sloane collection in the British Museum.

I am, Sir, yours faithfully,

Sept. 22nd, 1908. M.D.

COEXISTENCE OF TESTES AND UTERUS.

M. Cornil and M. Bossard have presented to the Paris Anatomical Society the contents of the scrotum of a young Greek who was operated on for a tumour. The testicles contained spermatozoa and between them was situated a uterus 10 centimetres in length.

GARBAGE MONGERS.

A PARTICULARLY flagrant case in which an unscrupulous dealer attempted to sell organic poison to the public came before the magistrates at Newry petty sessions on Sept. 16th. A woman of Carrowmanden was summoned by the Newry urban council for having exposed for sale the carcass of a pig unfit for human food. A veterinary surgeon stated that the carcass was partly undergoing decomposition. The bench fined the defendant 6d. and £3 7s. costs, with the alternative of one month's imprisonment. It is hard to understand why a nominal fine was inflicted. If the alternative sentence were only carried out in a few of these outrageous cases we should not so often have occasion to record them.

MEDICAL DEFENCE UNIONS.

To the Editor of THE LANCET.

SIR,—Can any of my brother practitioners inform me how many unions are there in England which a medical man may join by payment of annual subscription? It is needful in these days for every medical man to join such a union for protection.

Some time ago I found addressed to me an advertisement in which an insurance company was issuing a prospectus to insure medical men against any charge of unskilfulness which a patient may bring. Are there such insurance offices? Thanking you,

I am, Sir, yours faithfully,

Sept. 21st, 1908. PRACTITIONER.

ROGUERY AND CREDULITY.

A CASE which was heard before Judge Lumley Smith on Sept. 15th illustrates well the cynical remark of "the Claimant" about money and brains. The plaintiff was a maidservant named Ling, and the defendant a man named Tom Wallis Rogers who posed as a magnetic healer. Some nine years ago Miss Ling had one of her eyes removed and wore a glass eye in the socket. She heard of Rogers and went to see him when he told her that he could cause a new eye to grow. At first she did not believe him, but eventually he talked her over. She described the treatment, which consisted in his laying her face downwards on a table, covering her with some cloths, and then thumping her back. She attended every day from June 16th to August 13th and paid in all £14 15s. After one month's "treatment" he said that everything was going on well and that if she discontinued the treatment she would lose the sight of the other eye. Eventually she went to the Middlesex Hospital and in consequence of what she was told there the prisoner was arrested by the police. The prisoner in giving evidence said that he had 3500 clients. The jury found him guilty and he was sentenced to nine months' imprisonment in the second division. As, however, Dr. W. N. East, the assistant medical officer at Brixton prison, said that he considered the prisoner was of unsound mind, Rogers is to be kept under observation. Rogers's conduct is no worse than that of hundreds of other rogues whose advertisements appear in the columns of apparently respectable magazines and newspapers, and if he is mad there was a great deal of method in his madness. But so long as there exist such credulous persons as Ling for so long will there be rogues to prey on them.

AN ANCIENT PICTURE.

To the Editor of THE LANCET.

SIR,—I am much obliged to Mr. W. Fleming for his information respecting Hannah's picture. What I would like to know are the names of the two courtiers and two physicians who are in the picture besides Harvey, the King, and the Prince of Wales.

I am, Sir, yours faithfully,

Plymouth, Sept. 19th, 1908. M. D. KEILY.

MOTORS AND MEDICINE.

A MEDICAL correspondent sends us the following anecdote. We note that in the recent circular from the Local Government Board concerning motor-cars "excessive use of the horn" is placed among the marks of the inconsiderate driver, but the use on the present occasion of "the hooter" seems to have been fully justified.

"My little boy, aged six, who is much interested in motor-cars, was prescribed an enema by a medical friend. This was administered by his mother by means of a bottle syringe. Next day the doctor asked the small boy how he felt. 'Oh! much better, thank you, since mummy gave me the hooter.'"

PUBLIC HEALTH AS AN OPTIONAL SUBJECT FOR THE DIPLOMA OF F.R.C.S. EDIN.

To the Editor of THE LANCET.

SIR,—Will any of your readers with personal experience of examination in public health as an *optional* subject for the diploma of F.R.C.S. Edin. kindly give me some idea of the scope of the examination and the names of any books which they found useful? The information which you kindly gave me last week is not exactly what I require.

I am, Sir, yours faithfully,

Sept. 19th, 1908. DIPLOMA.

Enquirer.—With regard to the legal points involved our correspondent's best course is to consult a solicitor. Cases of this nature, however, are usually made a matter of compromise and perhaps the fairest arrangement would be that the nurse should be paid half her fee, for it is quite possible that owing to her engagement for the case in question she has lost the opportunity of giving her services to some other case.

ERRATUM.—In a review of Vol. I. of "Archives of the Pathological Institute of the London Hospital," which appeared on p. 878 of THE LANCET of Sept. 19th, the date of publication was given erroneously as "1908." It should have been 1906.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

During the week marked copies of the following newspapers have been received:—*Birmingham Daily Post, South Wales Daily News, Western Mail, Edinburgh Evening Dispatch, Liverpool Post and Mercury, Manchester Evening News, Birmingham Evening Dispatch, Daily Mail, Daily Chronicle, Wigan Observer, Eastern Morning News, Norfolk Weekly Standard, Chelsea Mail, Grimsby Telegraph, Nature, Pall Mall Gazette, Huddersfield Examiner, Nottingham Evening Post, Blackpool Gazette, &c.*

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Sept. 24th, 1908.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. in Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Sept. 18	30·00	S.E.	...	109	73	53	57	60	Hazy
,, 19	30·08	W.	...	105	71	58	59	61	Hazy
,, 20	30·03	S.W.	...	109	77	58	60	62	Fine
,, 21	30·04	S.W.	0·01	85	64	61	59	61	Raining
,, 22	29·97	S.	0·02	72	65	49	51	52	Foggy
,, 23	29·83	S.E.	0·02	94	66	52	57	60	Fine
,, 24	29·89	N.E.	...	75	62	57	58	59	Overcast

Medical Diary for the ensuing Week.

SOCIETIES.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8.30 P.M., Col. T. H. Hendley, C.I.E.: Presidential Address.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Dr. K. Scott: Diseases of the Eyes. 2.30 P.M., Operations.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin.

WEDNESDAY.—10 A.M., Diseases of Children. Diseases of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. K. Scott: Diseases of the Eyes. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Dr. K. Scott: Diseases of the Eyes. 2.30 P.M., Operations.

FRIDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin.

SATURDAY.—10 A.M., Diseases of Children. Diseases of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. K. Scott: Diseases of the Eyes. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. G. Pernet: Clinique (Skin).
TUESDAY.—4 P.M., Dr. L. Guthrie: Clinique (Medical)
WEDNESDAY.—4 P.M., Mr. J. Berry: Clinique (Surgical).
THURSDAY.—4 P.M., Mr. Hutchinson: Clinique (Surgical).
FRIDAY.—4 P.M., Dr. H. Tilley: Clinique (Throat).

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (28th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.).

TUESDAY (29th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Ophthalmic (2 P.M.), Tottenham (2.30 P.M.).

WEDNESDAY (30th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.).

THURSDAY (1st).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.).

FRIDAY (2nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.).

SATURDAY (3rd).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily

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